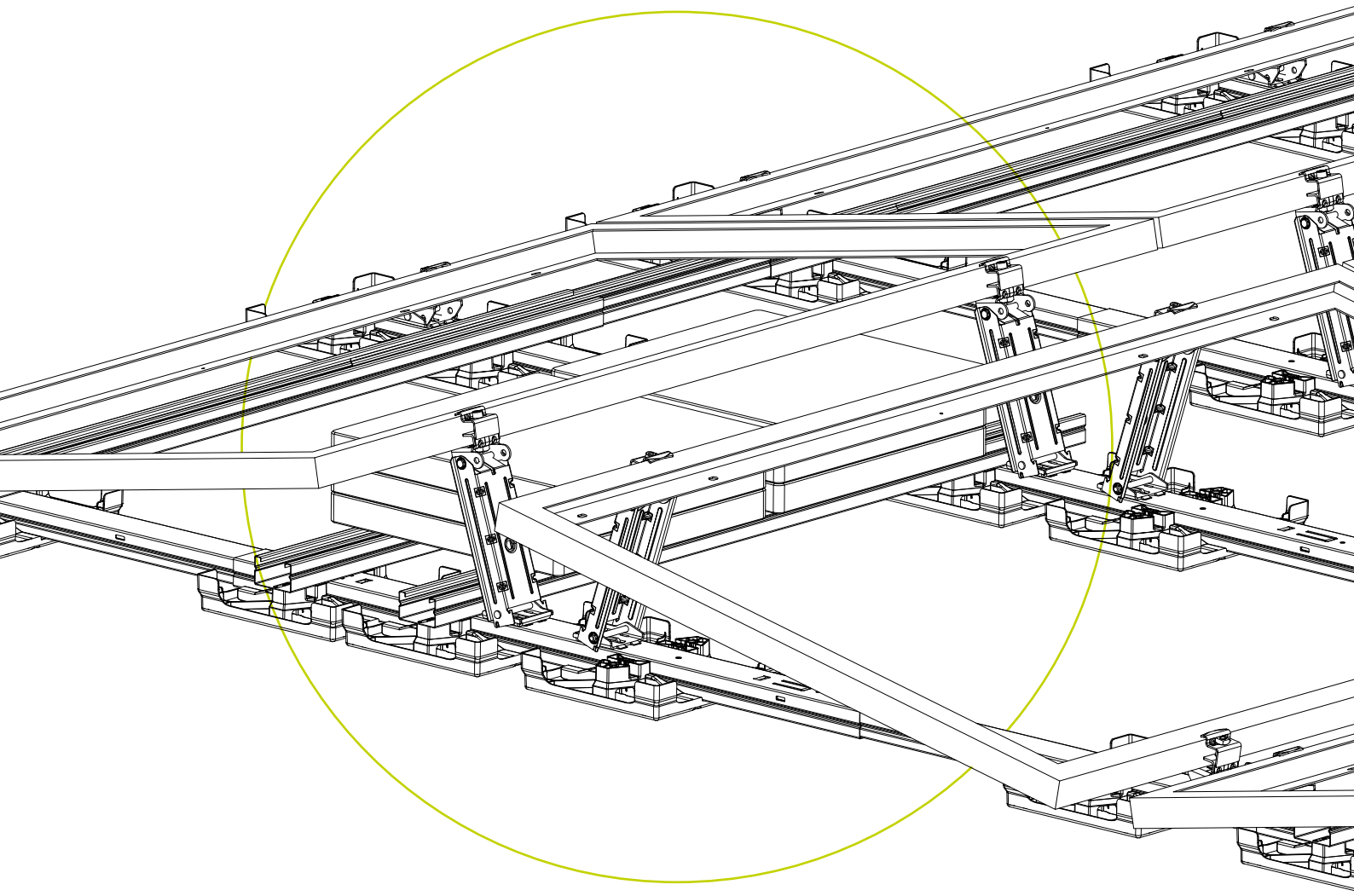
Photovoltaic Mounting Systems

Installation Instructions

S:FLEX LEICHTmount SNAP Quarter Point Clamping

Flat roof system for east/west orientation



Content

Read these installation guidelines carefully before installing the S:FLEX mounting system and retain them for future reference!
These installation guidelines are only complete with the project-specific implementation plans (project report)!

Intended use

The S:FLEX LEICHTmount PV mounting system LEICHTmount Snap is a frame system for mounting PV modules without roof penetration.
It is designed exclusively for the installation of PV modules.
The LEICHTmount Snap is designed for the installation of east/west-facing systems with module pitch angles of 10°.
The system is configured for horizontal module installation.
The adjustable components allow the use of almost all commercially available modules.
The LEICHTmount Snap system is designed for easy installation on the following substrates:
Foil roofs, bitumen roofs, gravel roofs, concrete roofs.

Any other use in this regard is considered misuse of the product. In particular, compliance with the instructions in these installation guidelines constitutes intended use. S:FLEX GmbH accepts no liability for damage resulting from nonobservance of the installation guidelines or from misuse or incorrect use of the product.

About this document

This installation instruction describes the installation of the LEICHTmount Snap system on flat roofs with a pitch angle of 10°.

It must be ensured that only the current and complete installation instructions are used for installation.

Warnings

The warning texts provided in these installation guidelines relay safety-related information.
They are:

Unless observed, there is a major risk of injury as well as a risk of death.

Failure to observe this may lead to property damage.

General information – standards and guidelines

Every photovoltaic system must be installed in accordance with the instructions contained in the respective installation guidelines and the project report.
These installation instructions are based on state-of-the-art technology and many years of experience of installing our systems on site. It must be ensured that only the current and complete installation instructions are used for the installation, and that a print-out of the installation guidelines is stored in the immediate vicinity of the system. The system and these guidelines are subject to technical changes.

The project report is part of the installation instructions and is created on a project-specific basis. All of the information contained in the project report must be strictly observed. The project report contains the location-based static calculations. The S:FLEX mounting system must be designed and created with the S:FLEX software.

Since individual project-specific features must be considered with every roof, expert advice must always be sought prior to installation. Before installation, the PV system creator must ensure that the existing roofing and roof substructure are suitable for the additional loads. The condition of the roof substructure, the quality of the roof covering and the maximum load-bearing capacity of the roof construction must be checked by the system creator.
Contact a local structural engineer for this purpose.

When installing the PV system, always comply with the module manufacturer's installation instructions. In particular, it is necessary to check that the module manufacturer's instructions regarding the module clamping guidelines (module clamping surface and clamping range) are complied with. If this is not the case, the customer must obtain a declaration of consent from the module manufacturer before the installation; alternatively, the mounting system must be adapted in accordance with the module manufacturer's specifications.

The requirements for the protection of PV mounting systems against lightning and surges must be met in accordance with the DIN and VDE regulations. The specifications of the relevant power supply company must be observed.

Care must be taken that the PV system to be installed does not impair the functioning of the existing lightning protection system. It is also important to ensure that the PV system is designed so that it can be included in the protection zone of the building's lightning protection system. The separation distances between the PV system and the lightning protection system specified in the relevant regulations must be adhered to. During installation, the local fire regulations must be observed, e.g. firewalls must not built over and the required clearances must be maintained.

If the roofing is altered, the manufacturer's guidelines must be observed. During and after installation, the frame components may not be stepped on or be used as a climbing aid. There is a risk of falling and the roofing underneath could be damaged.

Prior to installation, the creator of the photovoltaic system must ensure that the installation is carried out while strictly adhering to national and location-specific building regulations, safety and accident prevention regulations, standards and environmental protection regulations.

Every person who installs the S:FLEX PV mounting systems is obligated to independently inform himself/herself about all rules and regulations for professionally correct planning and installation, and to comply with said rules and regulations during the installation process. This also includes compliance with the latest versions of the respective rules and regulations.

Installation of the PV system may only be carried out by trained specialists.

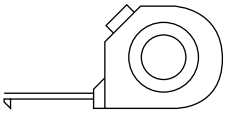
All system components must be checked for damage before installation.
Damaged components must not be used!

Installation of the S:FLEX substructure and the PV system may only be carried out by trained specialists. System components must not be used as step ladders. The modules must not be stepped on. When working on roofs, there is a risk of falling off and falling through roofs. A fall can result in injury or death. Ensure that appropriate climbing aids and fall-protection equipment (e.g. scaffolding) are provided as well as protection from falling parts.

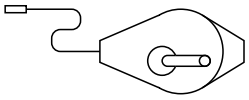
Check the building statics and construction/condition of the roof substructure before starting the installation. During installation, the instructions in the installation guidelines and project report must be strictly observed. Failure to observe the installation guidelines and the project report may result in damage to the PV system and to the building.

Required Tools

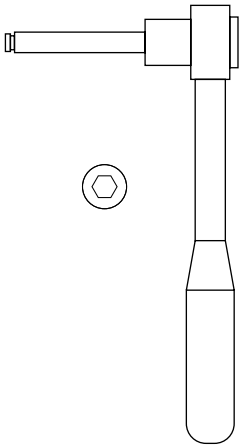
1 Tape measure



2 Chalk line



3 Torque-wrench with attachment Hexagon socket SW 6 mm



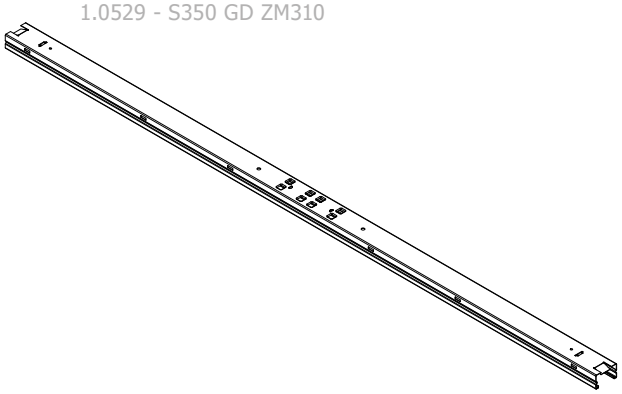
4 Spacing template (optional tool)

Attention! Some components are available in different lengths and versions.
The exact article versions can be found in the project documents.

Component Types

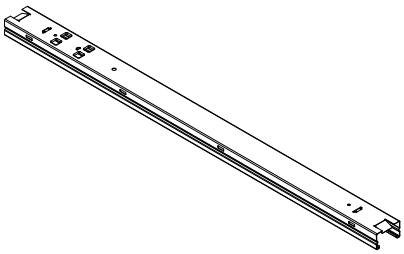
A Ground rail

1.0529 - S350 GD ZM310



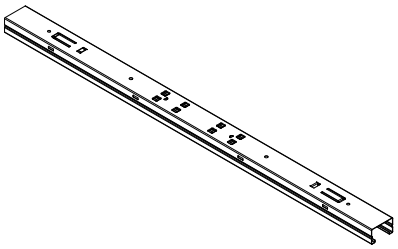
B Ground rail short

1.0529 - S350 GD ZM310



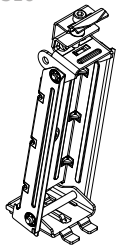
C Ground rail connector

1.0529 - S350 GD ZM310



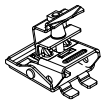
D Tower Single

1.0529 - S350 GD ZM310
1.0531 - S550 GD ZM310
1.4301 - S235



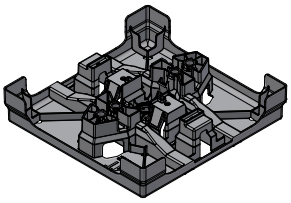
E Base Single

1.0531 - S550 GD ZM310
1.4301 - S235



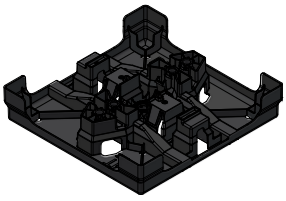
F Base plate Multi (iron gray)

PE-HD GF 20

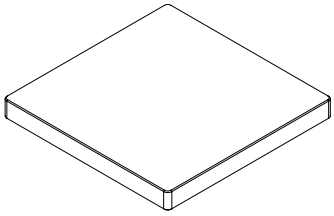


G Base plate (black)

PE-HD GF 20



H Ballast stone with the standard dimensions 40 × 40 × 4 cm (not included in delivery)

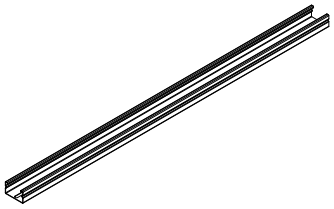


Attention! Some components are available in different lengths and versions.
The exact article versions can be found in the project documents.

Component Types

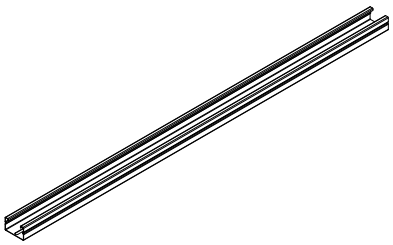
I Roll-bar

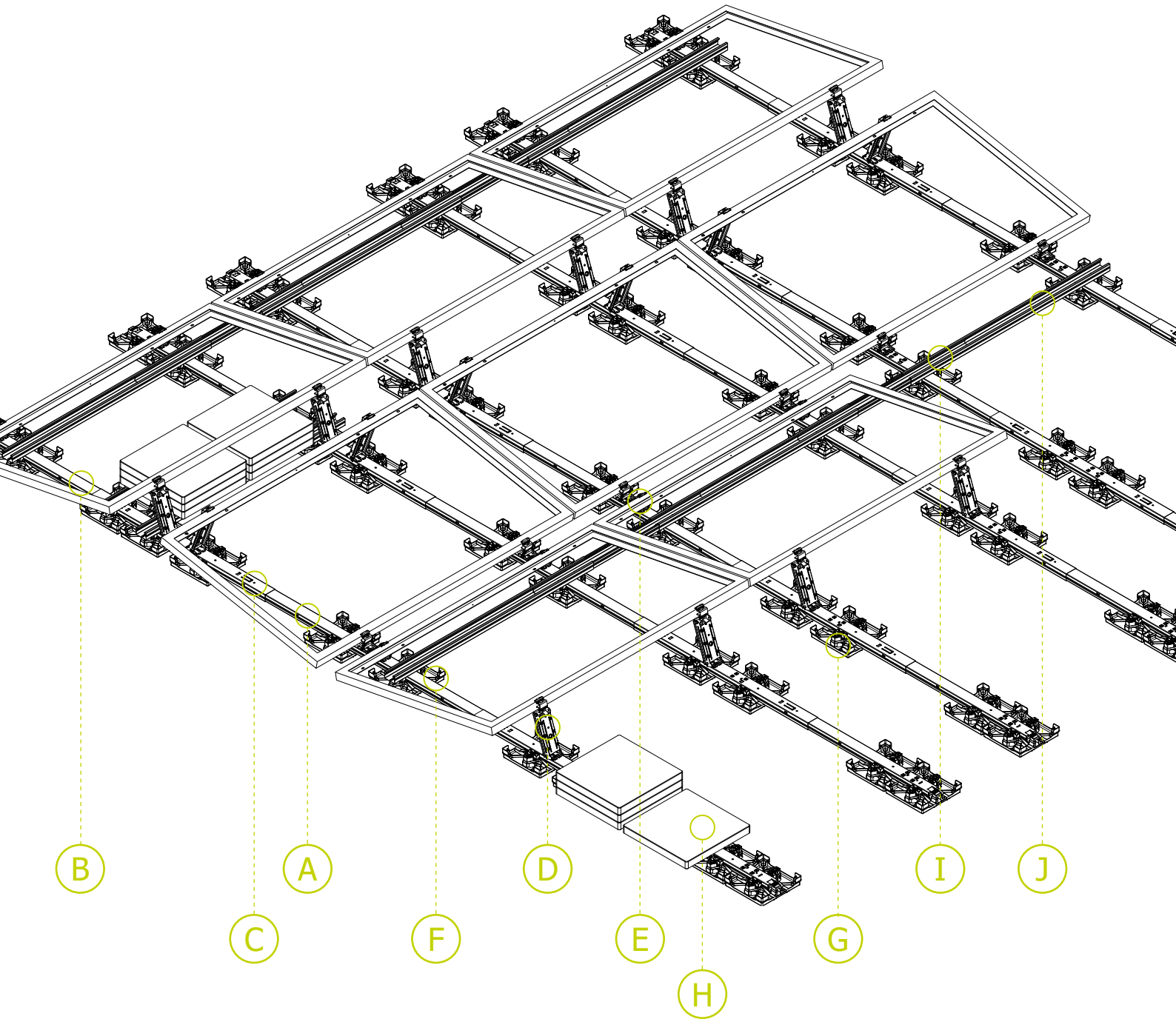
1.0529 - S350 GD ZM310



J Splice for roll-bar

1.0529 - S350 GD ZM310





A Ground rail

B Ground rail short

C Ground rail connector

D Tower Single

E Base Single

F Base plate Multi

G Base plate

H Standard ballast stone

I Roll-bar

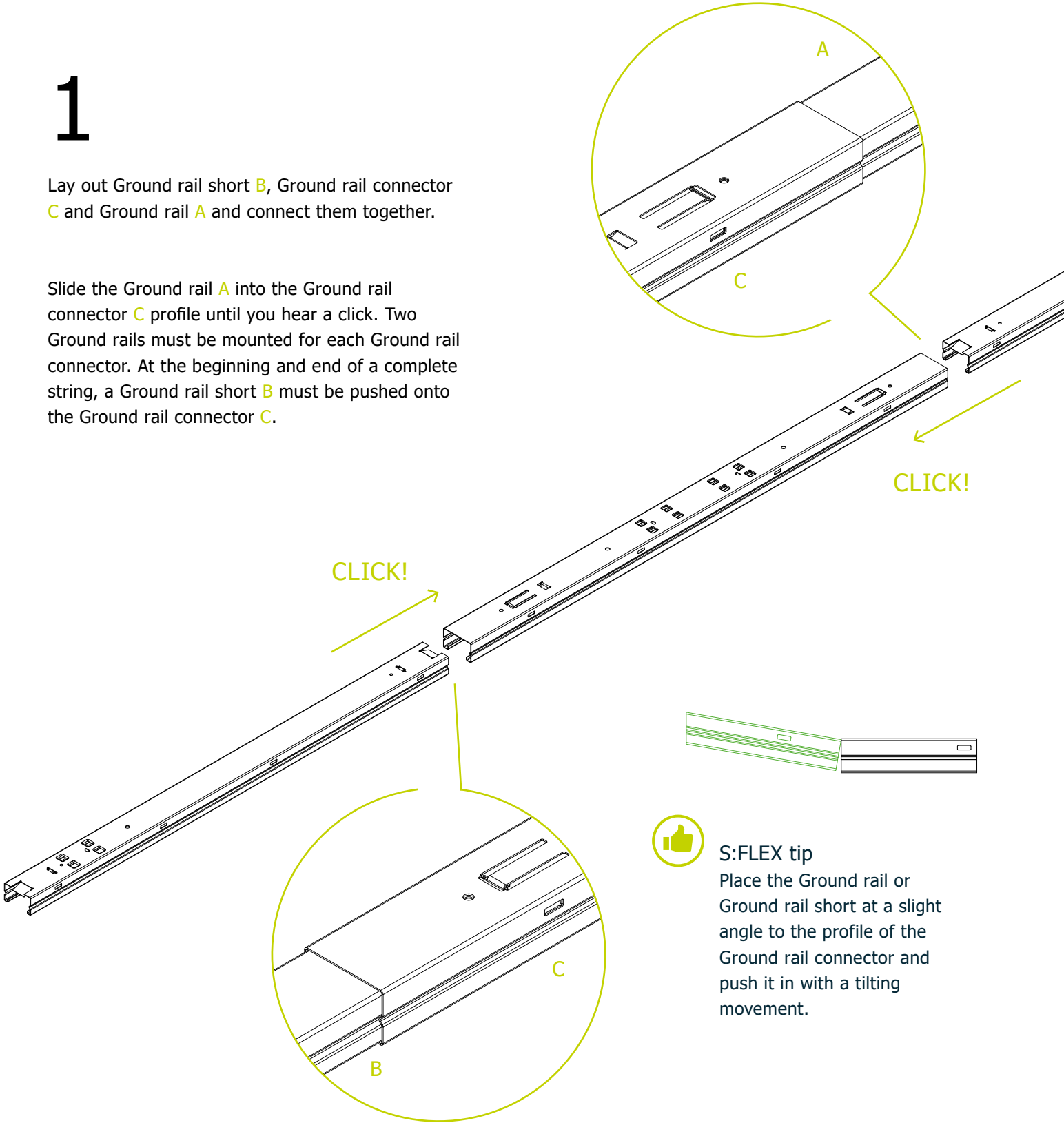
J Splice for roll-bar

Ground railConnection = Connection of Ground rail and Ground rail connector
Roll-bar = Roll-bar/Link to connection of Ground railConnection rows

1

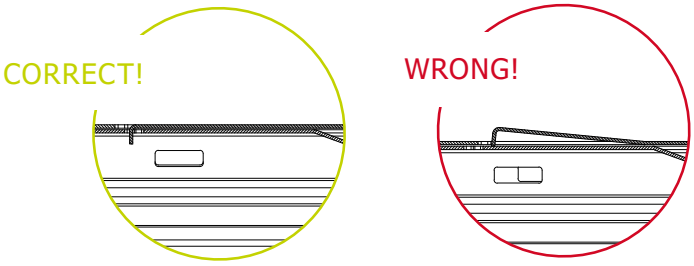
Lay out Ground rail short B, Ground rail connector C and Ground rail A and connect them together.

Slide the Ground rail A into the Ground rail connector C profile until you hear a click. Two Ground rails must be mounted for each Ground rail connector. At the beginning and end of a complete string, a Ground rail short B must be pushed onto the Ground rail connector C.



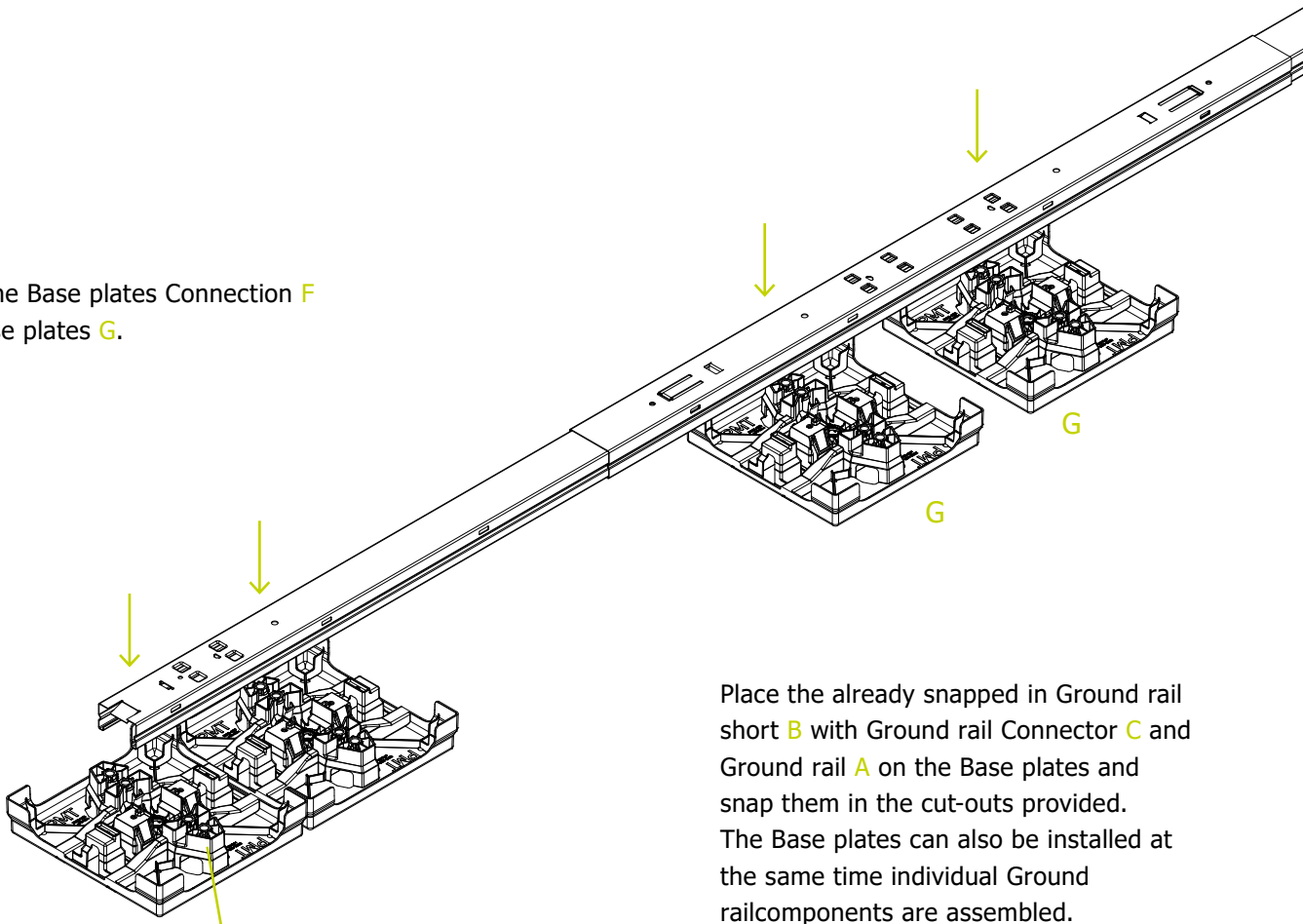
S:FLEX tip
Place the Ground rail or Ground rail short at a slight angle to the profile of the Ground rail connector and push it in with a tilting movement.

Attention!
Check the snap-lock joint for strength and to ensure it fits perfectly.



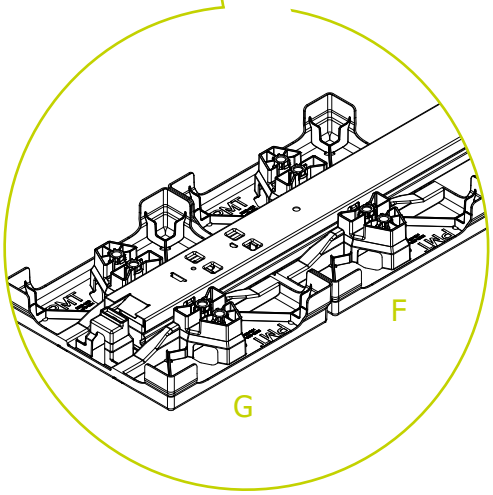
2

Assemble the Base plates Connection F and the Base plates G.

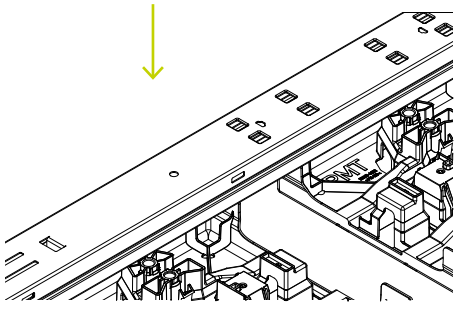


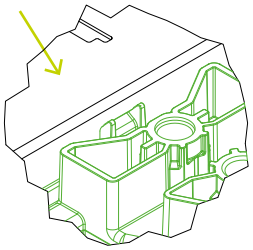
Place the already snapped in Ground rail short B with Ground rail Connector C and Ground rail A on the Base plates and snap them in the cut-outs provided.
The Base plates can also be installed at the same time individual Ground railcomponents are assembled.

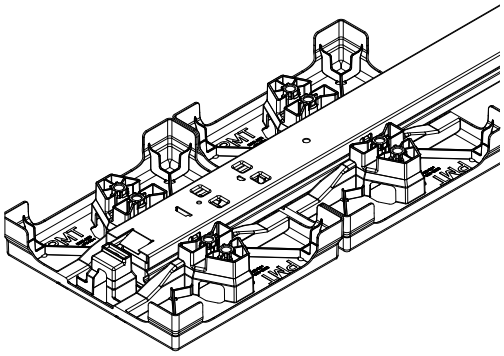
Consult the current project report for the exact assembly of the Base plates Connection F and the Base plates G.



Attention!
Ensure that the locking lug is appropriately locked to the Ground rail, Ground rail short or Ground rail connector.

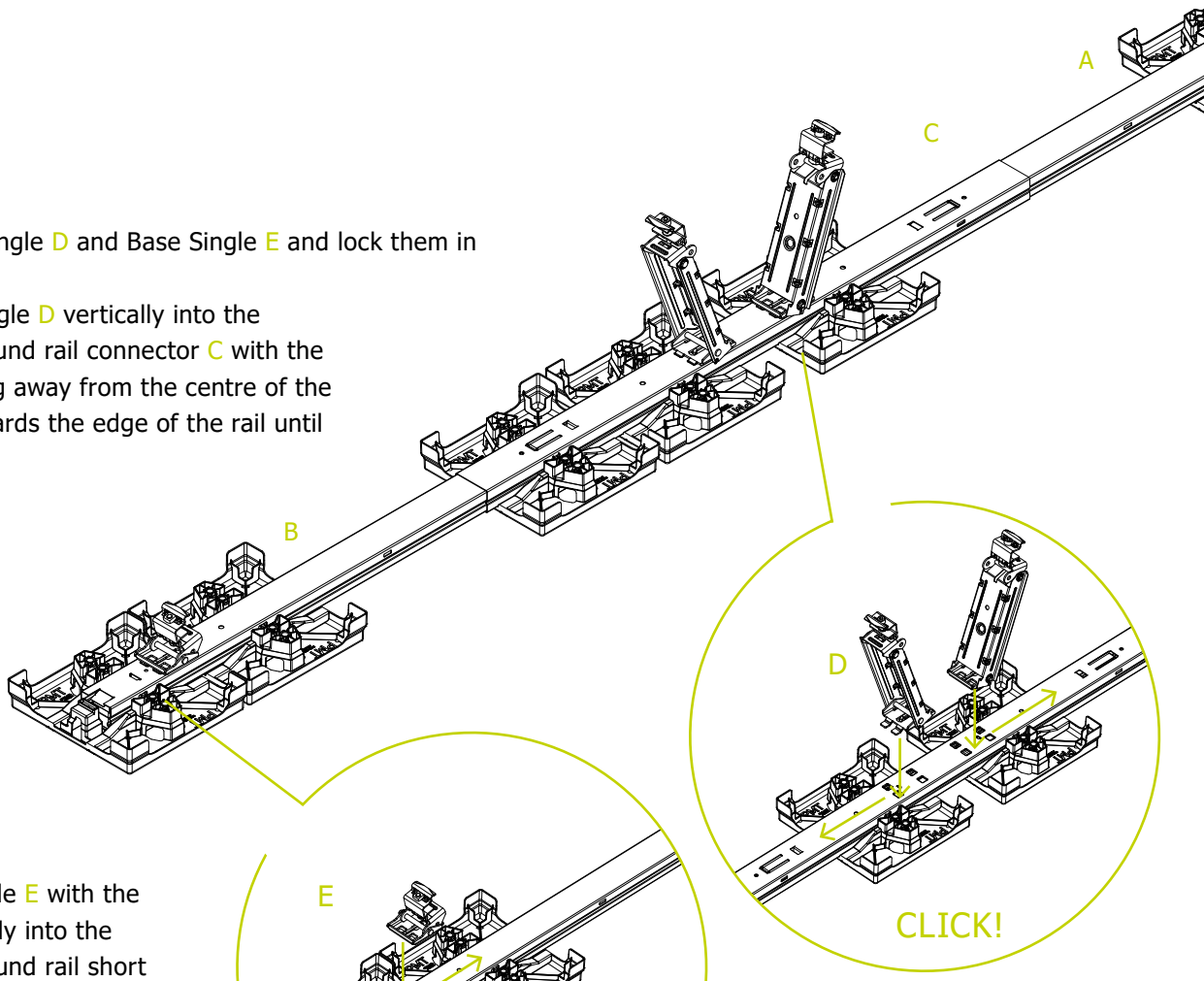




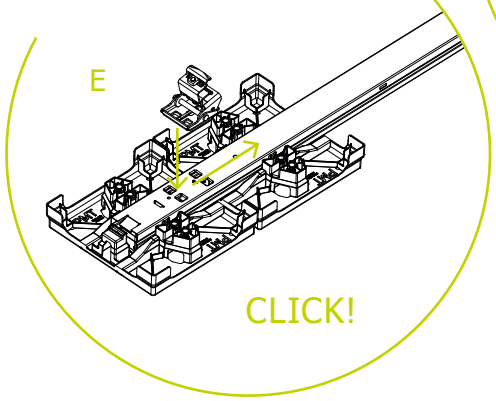


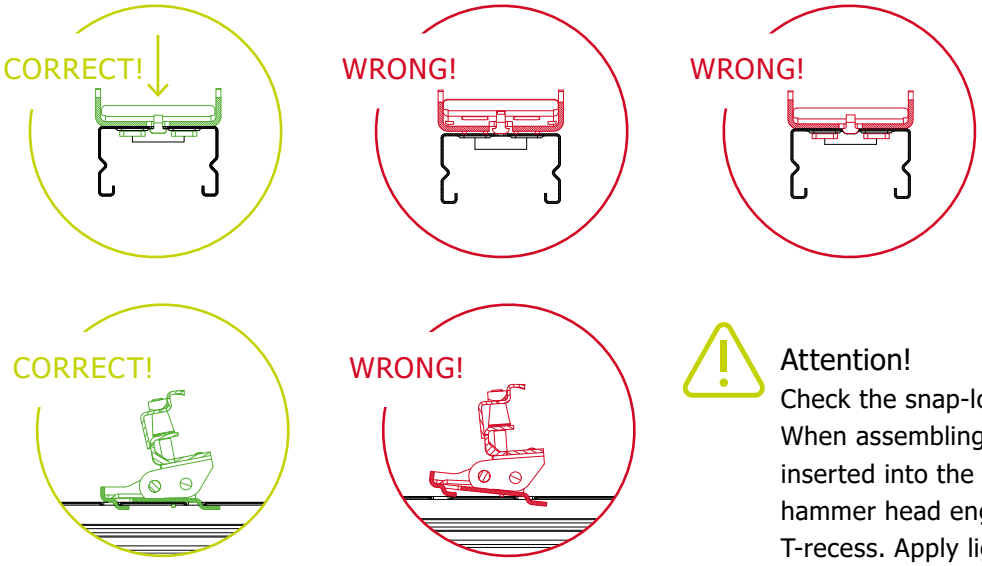
3

Put on the Tower Single D and Base Single E and lock them in place.
Press the Tower Single D vertically into the recesses of the Ground rail connector C with the locking lugs pointing away from the centre of the rail and push it towards the edge of the rail until you hear a click.



Press the Base Single E with the locking lugs vertically into the recesses of the Ground rail short B and push it towards the middle of the rail until you hear a click. With Ground rail A, the Base Single E must be placed with the locking lugs pointing away from the centre of the rail and locked in place.

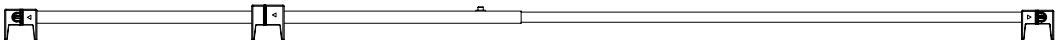




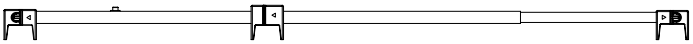
Attention!
Check the snap-lock joint to ensure it fits perfectly. When assembling, ensure that all 4 locking tabs are inserted into the recess provided and that the hammer head engages in the corresponding T-recess. Apply light pressure to the hammer head to ensure that it assumes its final position.

4

Determining the module length using the spacing template.



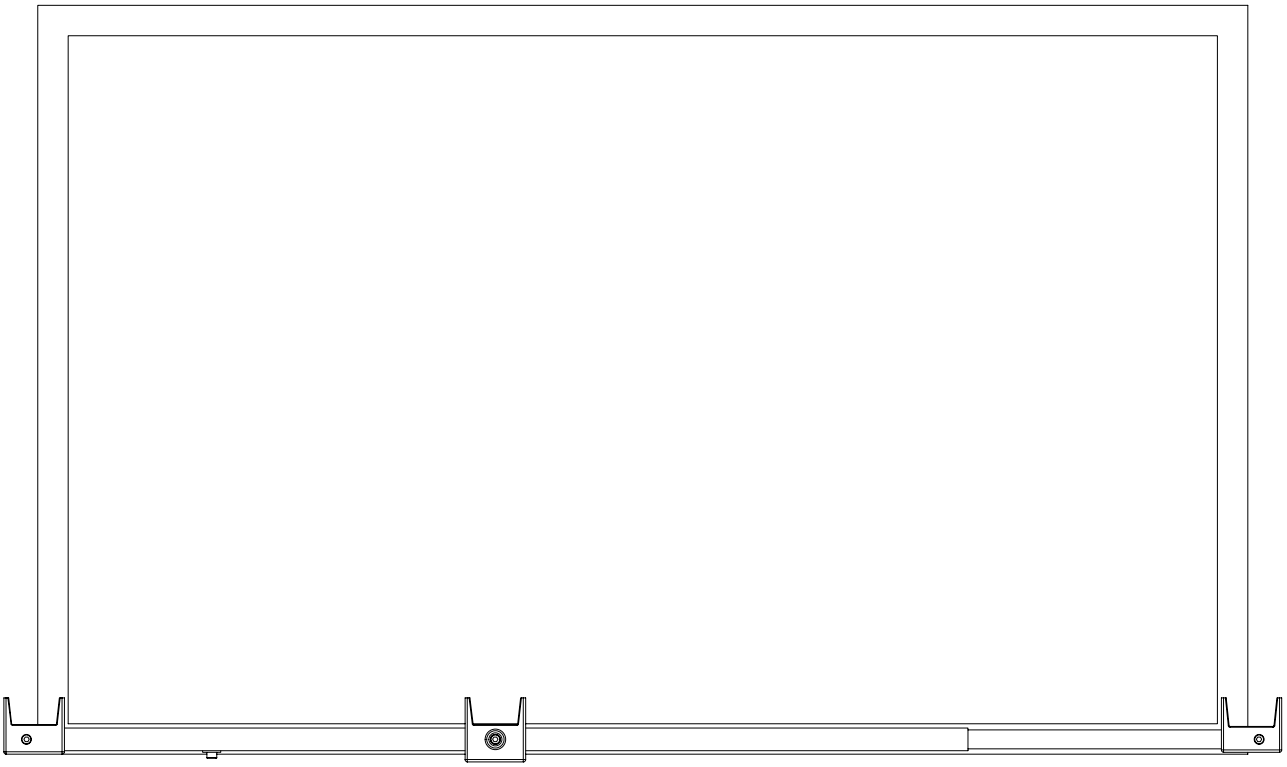
Maximum length: 2,500mm



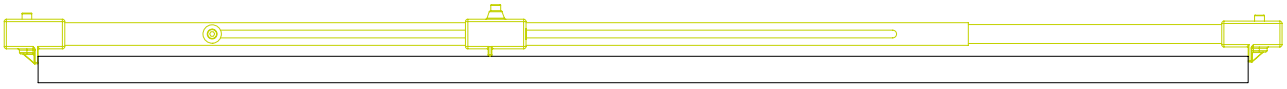
Minimum length: 1,600mm

Variable plastic foot

Plastic feet of the same color for alignment with quarter point clamping

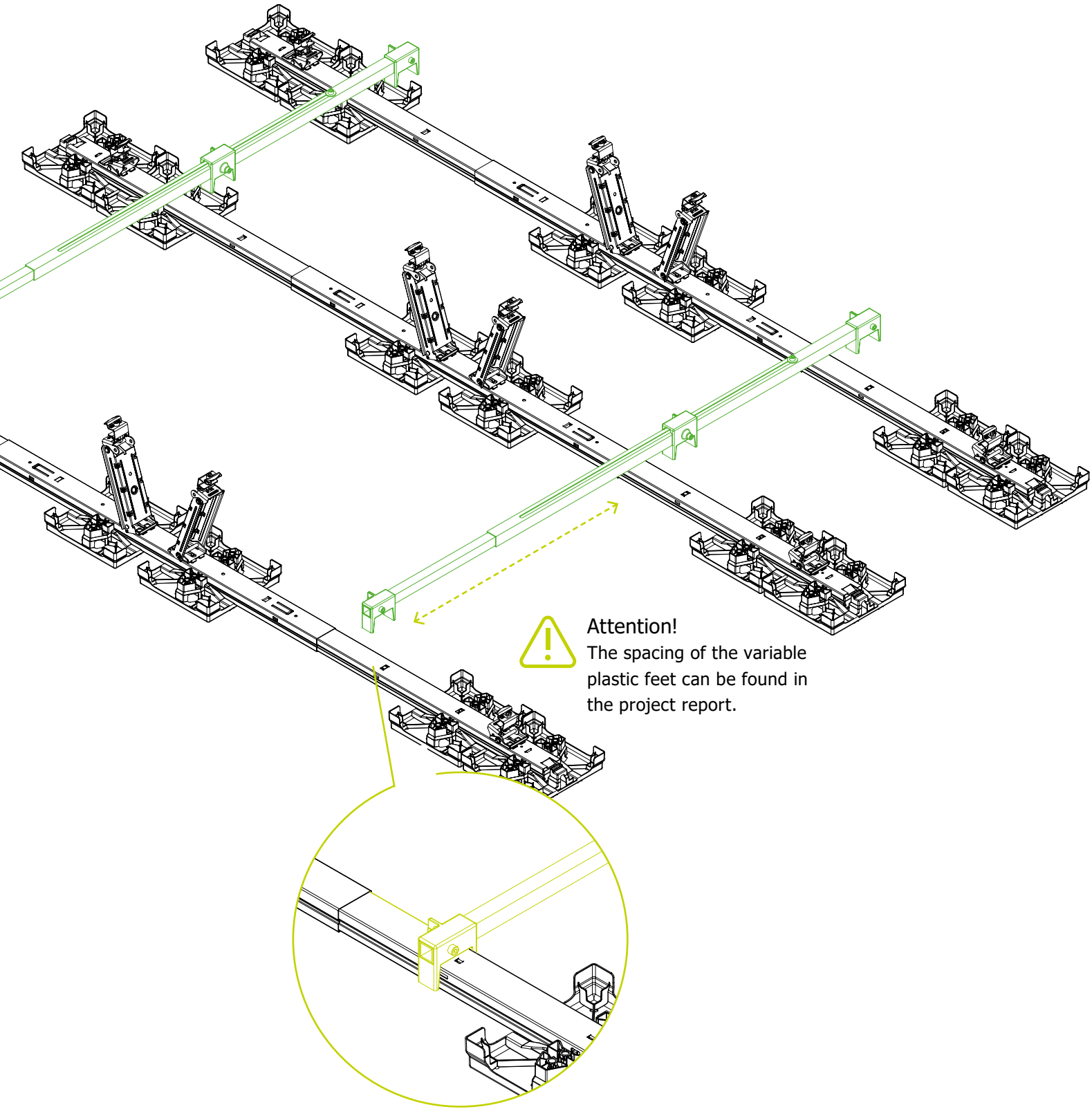


To determine the module length, rotate the spacing template, place the two outer spacing ribs against the module frame and tighten with the locking screw.



4.1

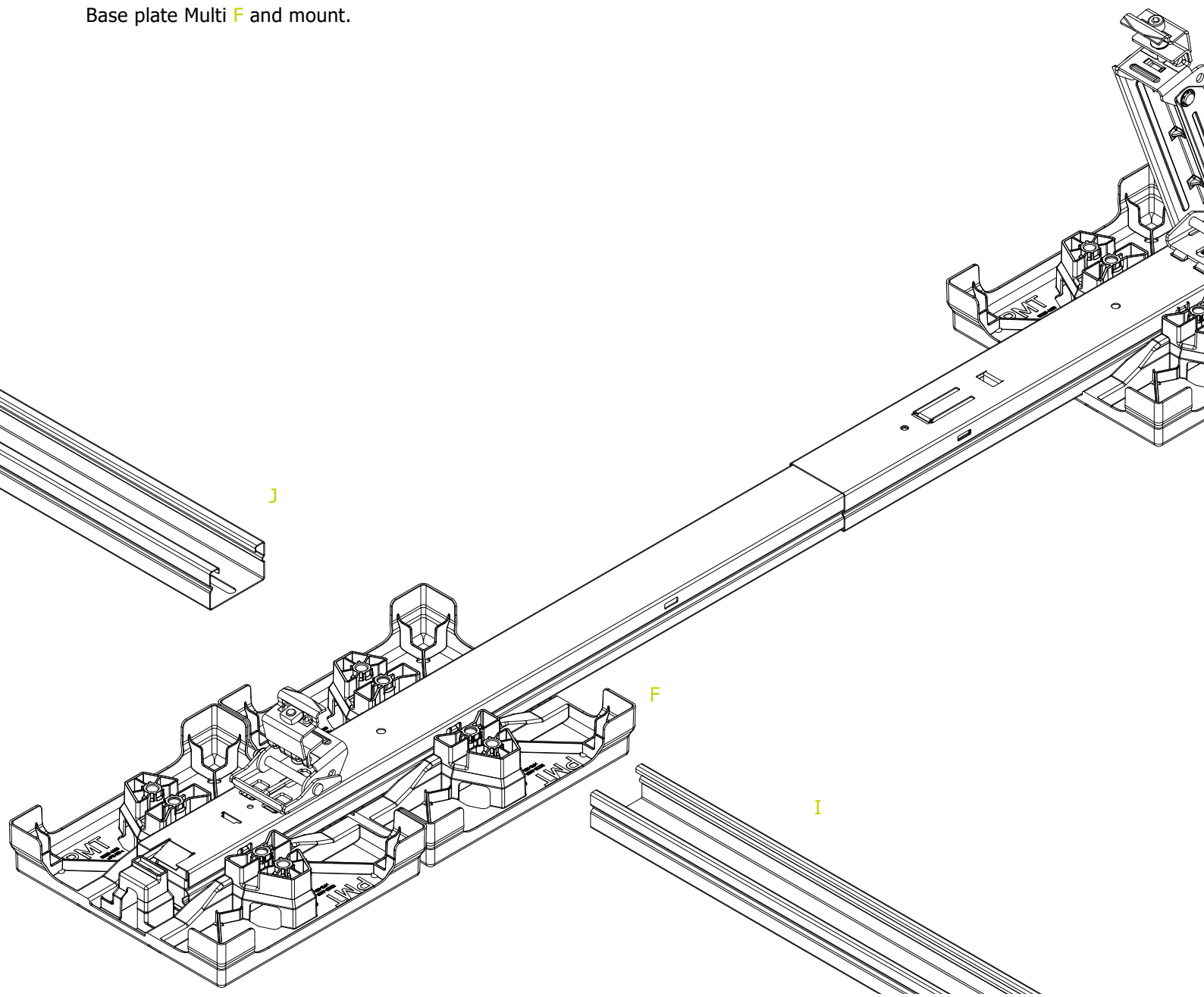
Align the mounted and positioned rails using the previously set spacing template.



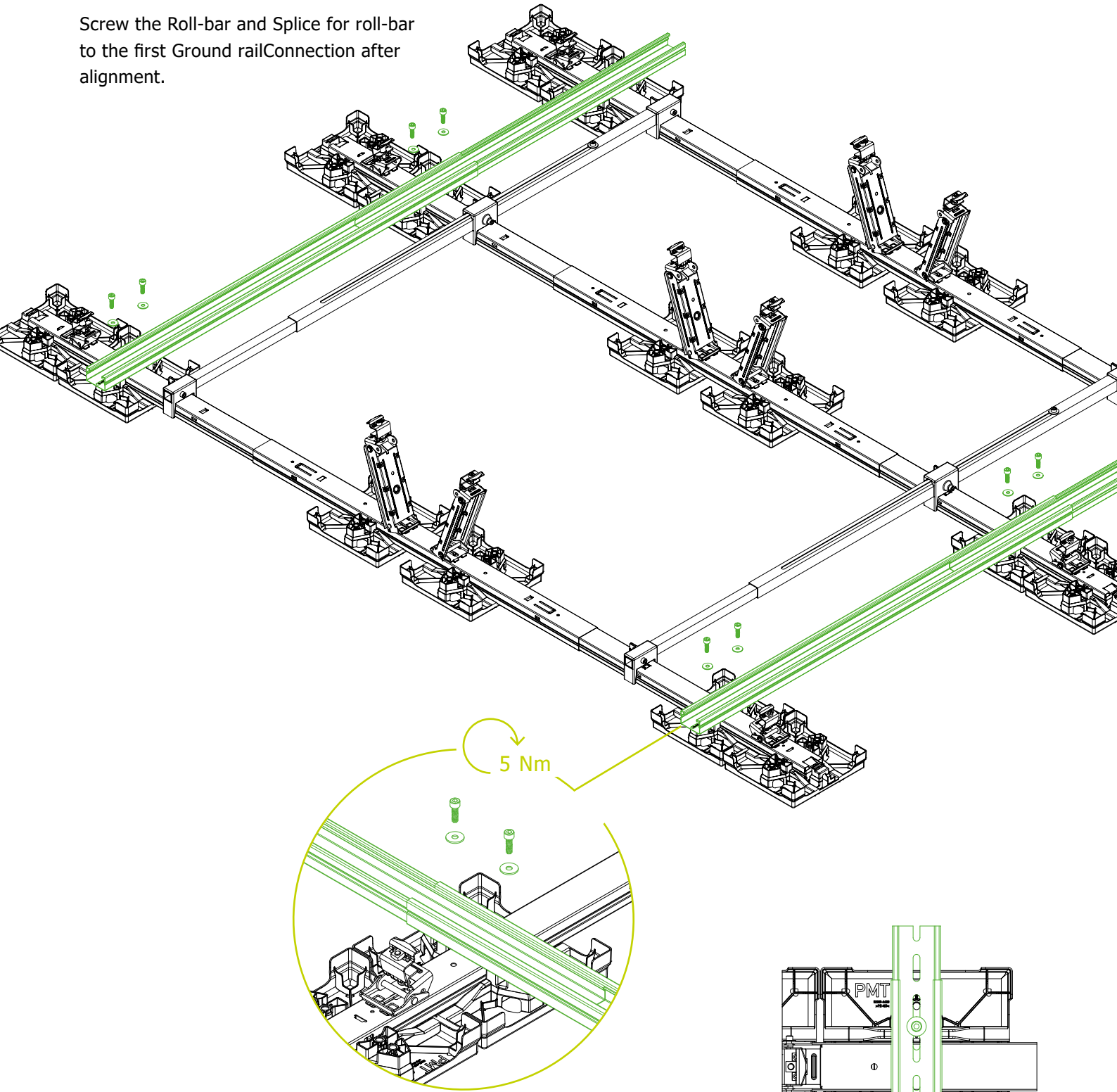
Attention!
The spacing of the variable plastic feet can be found in the project report.

4.2

Slide Splice for roll-bar J into Roll-bar I, place on Base plate Multi F and mount.



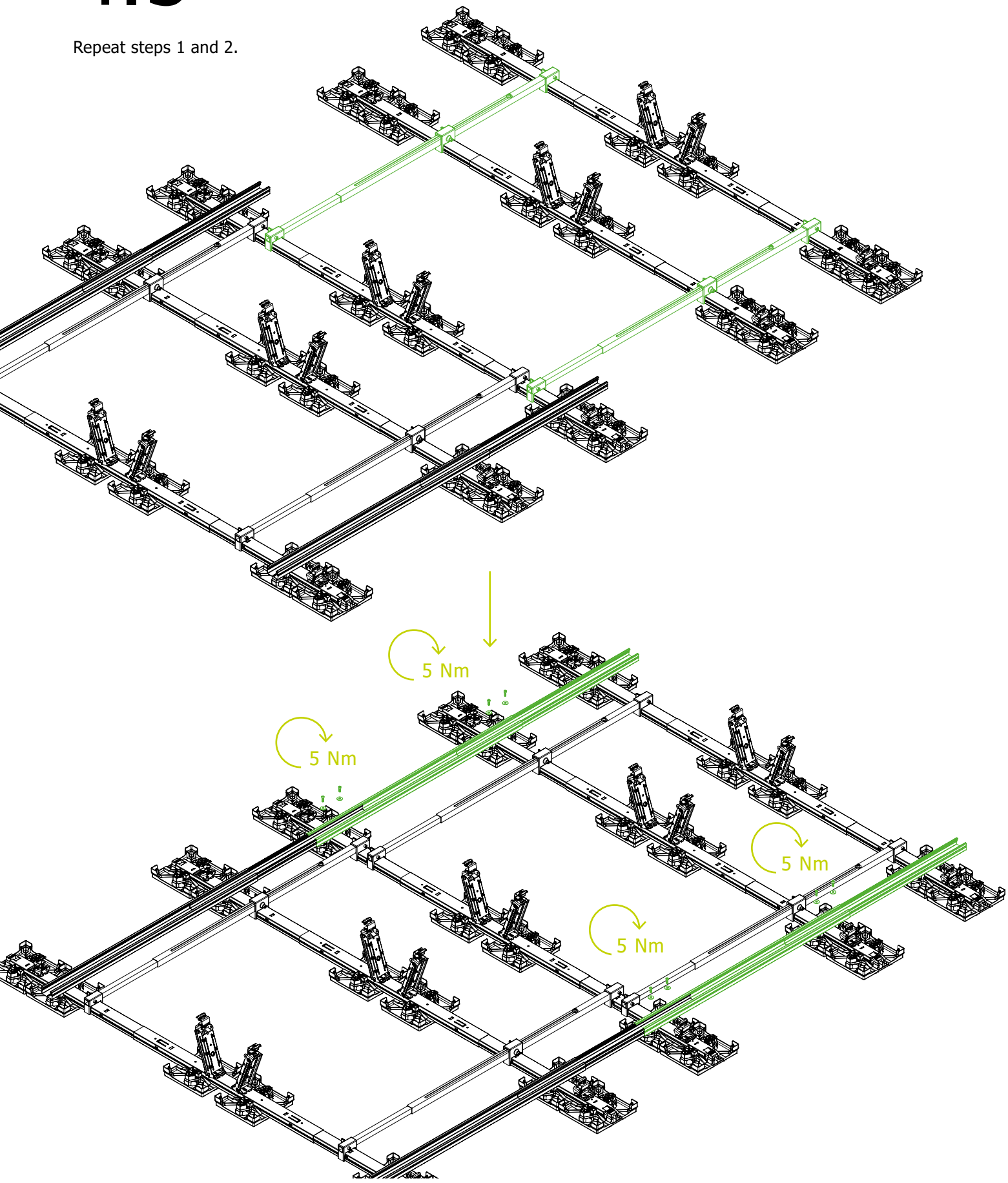
Screw the Roll-bar and Splice for roll-bar to the first Ground railConnection after alignment.



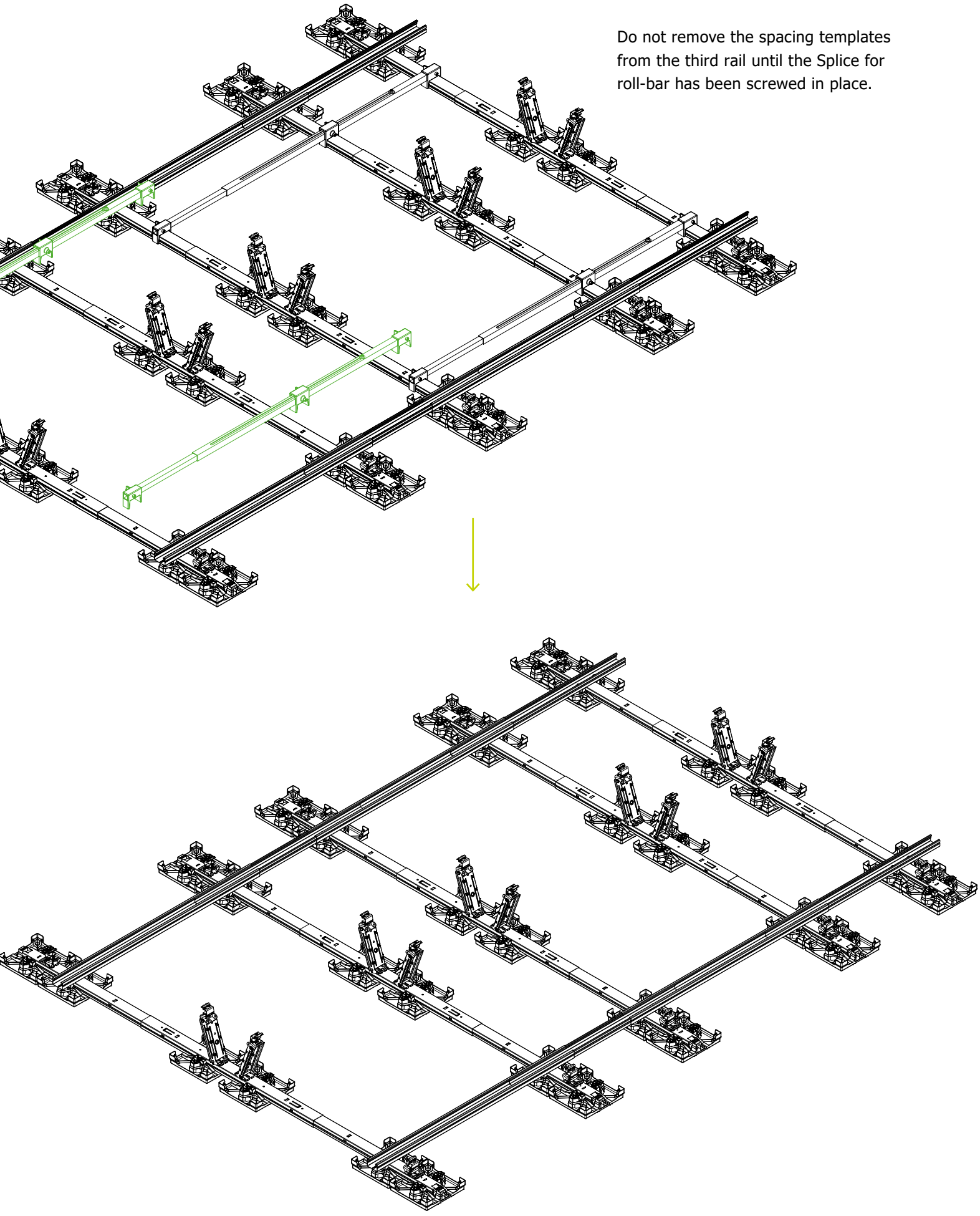
Roll-bar edge I, Splice for roll-bar edge J and Base plate Multi F must be mounted at the specified locations in accordance with the project report.

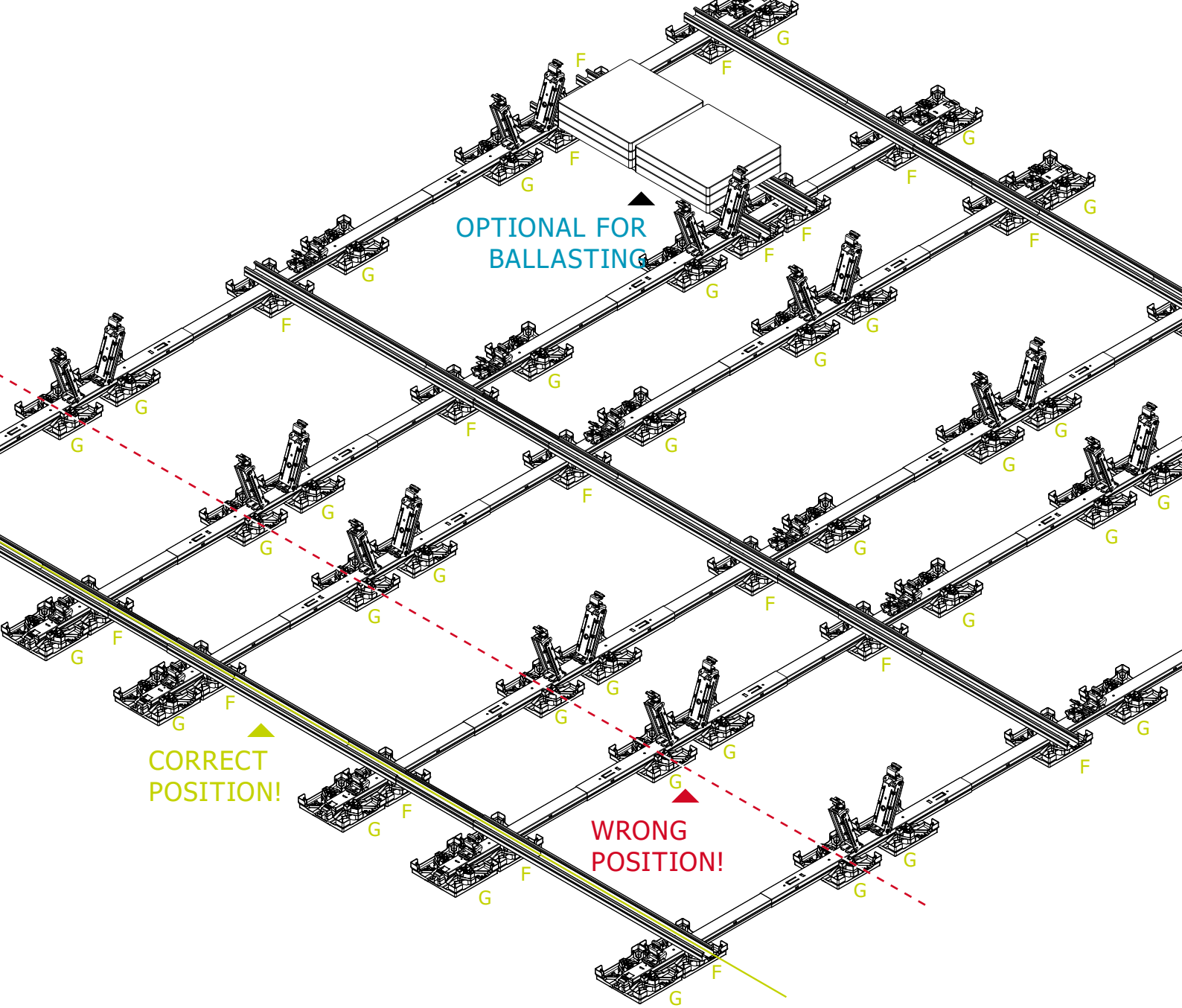
4.3

Repeat steps 1 and 2.



Do not remove the spacing templates from the third rail until the Splice for roll-bar has been screwed in place.





NOTE

Please always refer to the current project documents for the exact location / position of the Roll-bar I, Splice for roll-bar J and Base plate Multi F.

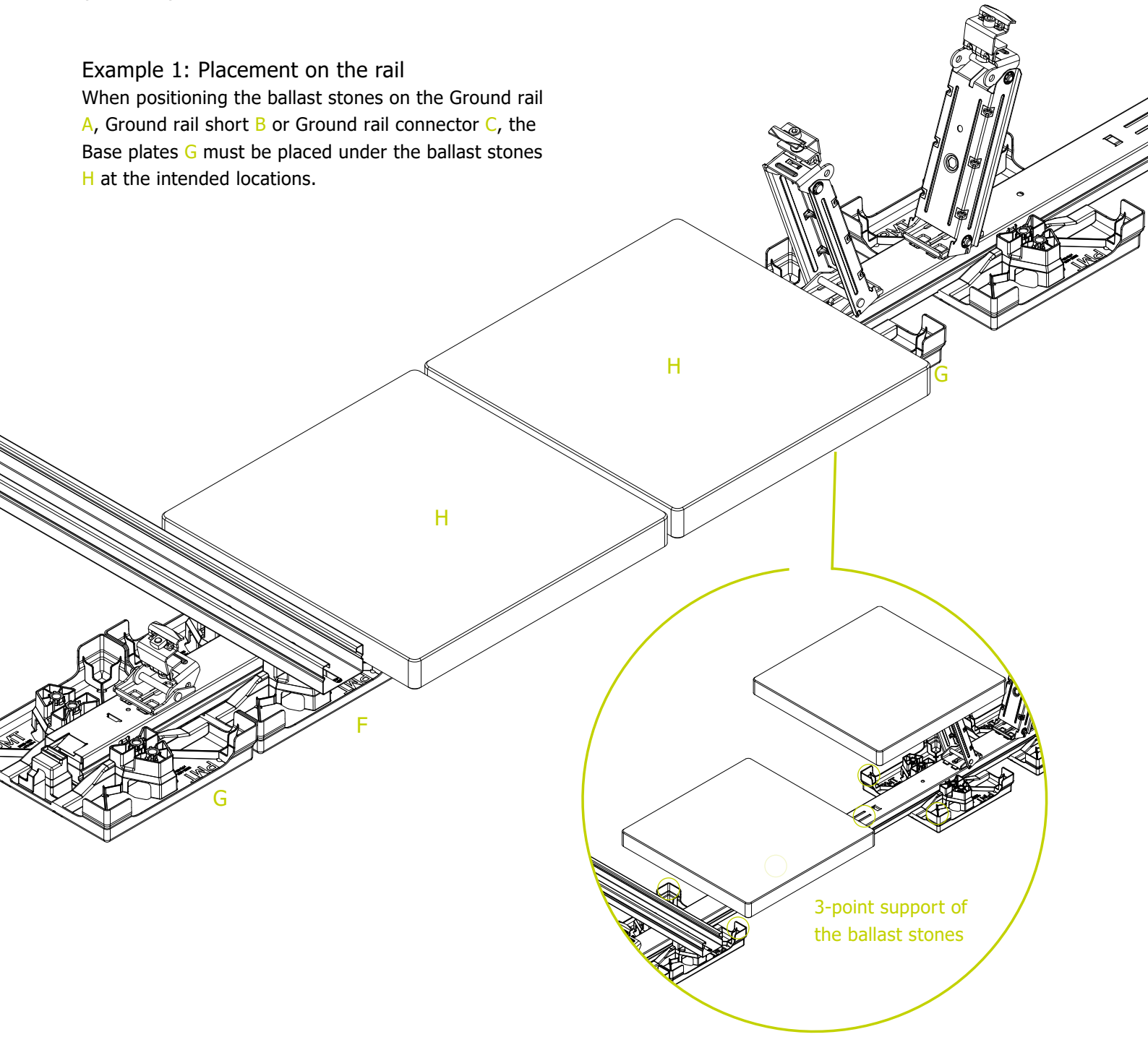
Roll-bar I and Splice for roll-bar J must always be mounted once per double module on a base and at the end of a system. Ensure that the assembly is always carried out on the same side of the single module unit.

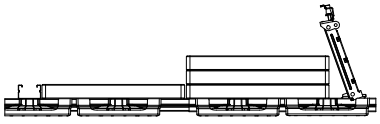
5

Options for ballasting using the example of a ballast stone H (40 x 40 x 4).

Example 1: Placement on the rail

When positioning the ballast stones on the Ground rail A, Ground rail short B or Ground rail connector C, the Base plates G must be placed under the ballast stones H at the intended locations.

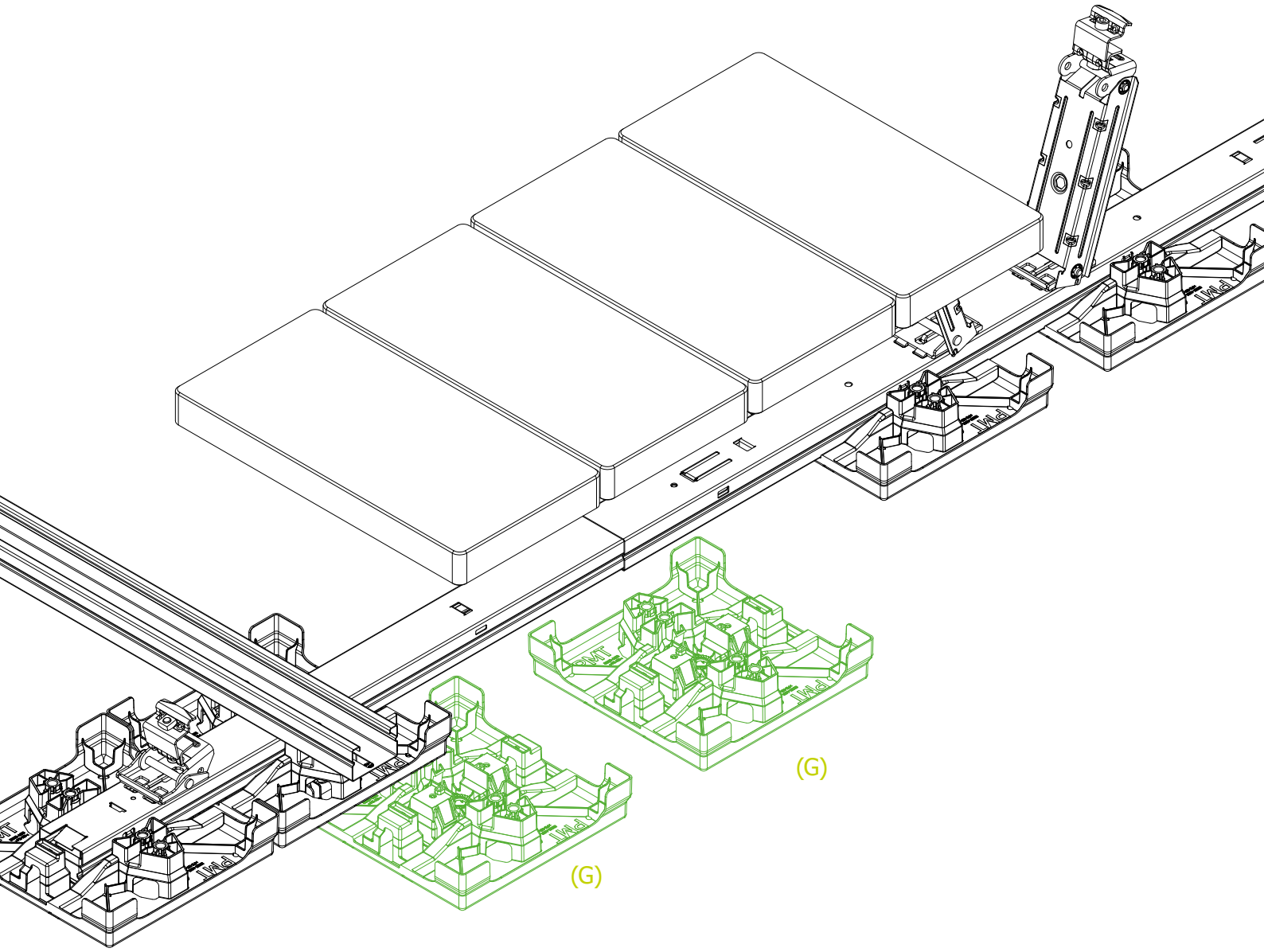


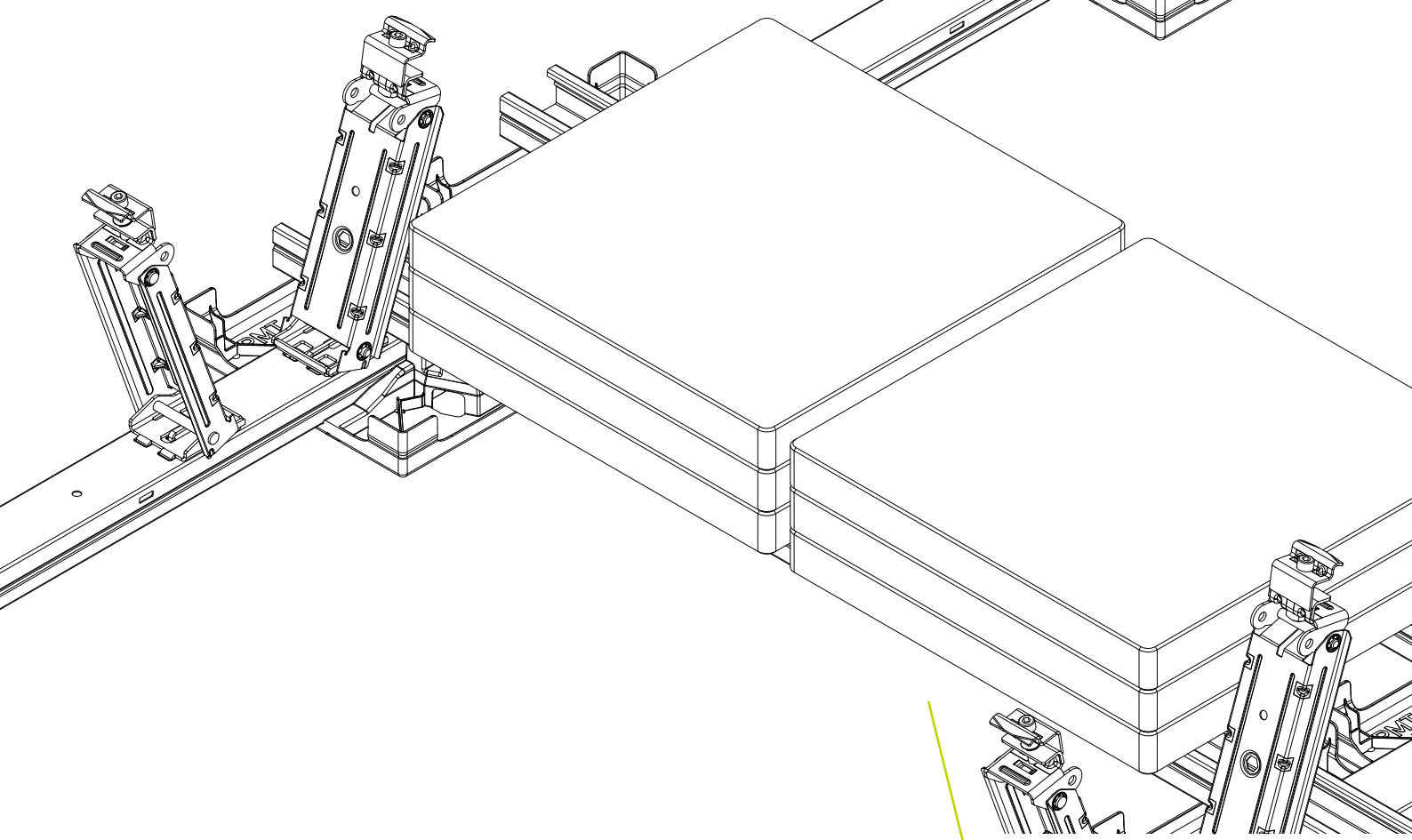


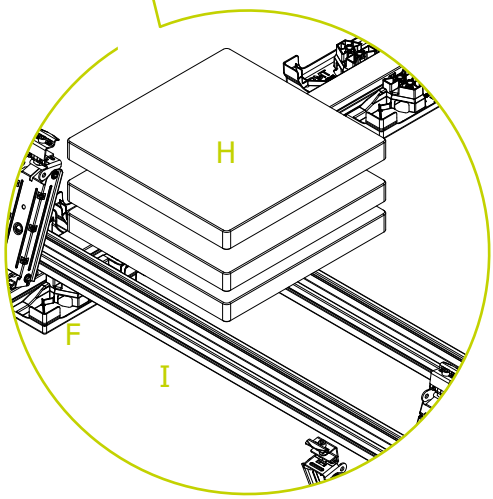
Attention!

It must be ensured that the ballast stone has at least the 3-point support shown. See the current project report for the number of the Base plate.

Optionally, depending on the insulation and size of the ballast stones, more Base plates (G) can also be installed.







Example 2: Placement on Roll-bar / Splice for roll-bar

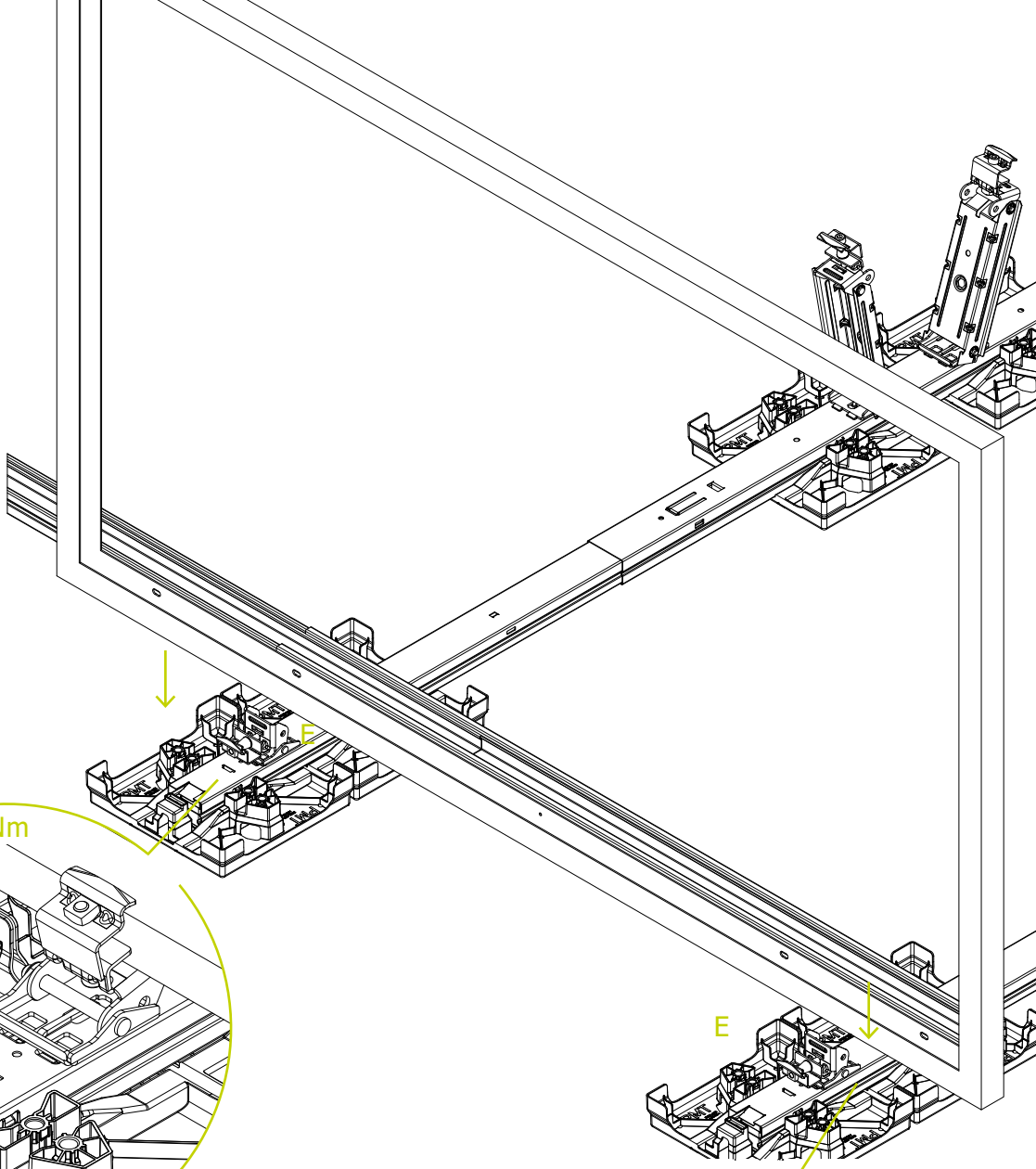
With this placement variant, Roll-bar H and Splice for roll-bar I are additionally mounted within the system on which the ballast stones are placed.

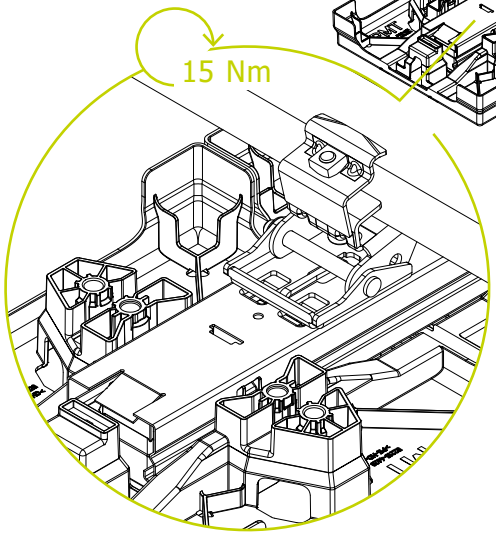
Note

See the current project report for the number and location of ballasting.

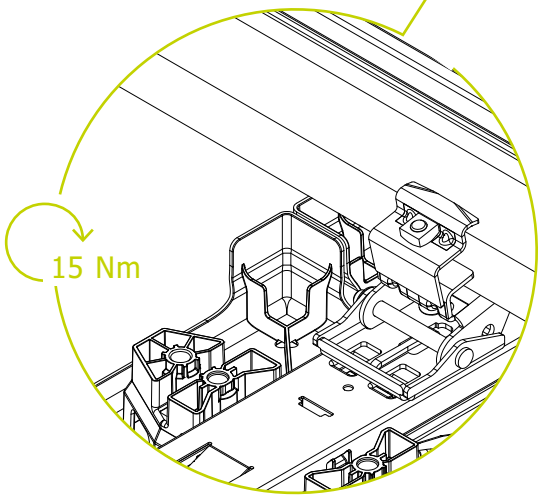
6

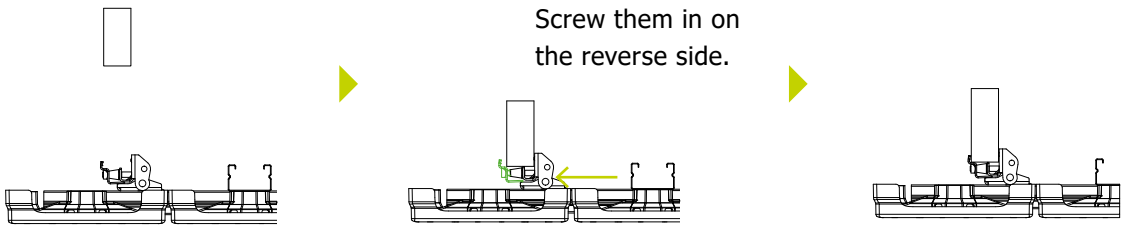
Insert the modules vertically into the Base Single E and screw them in on the reverse side.





Place the Base Single E in a vertical position and insert the module into the clamps from above. Then screw on from the rear side, checking that it is firmly in place and in the correct position.

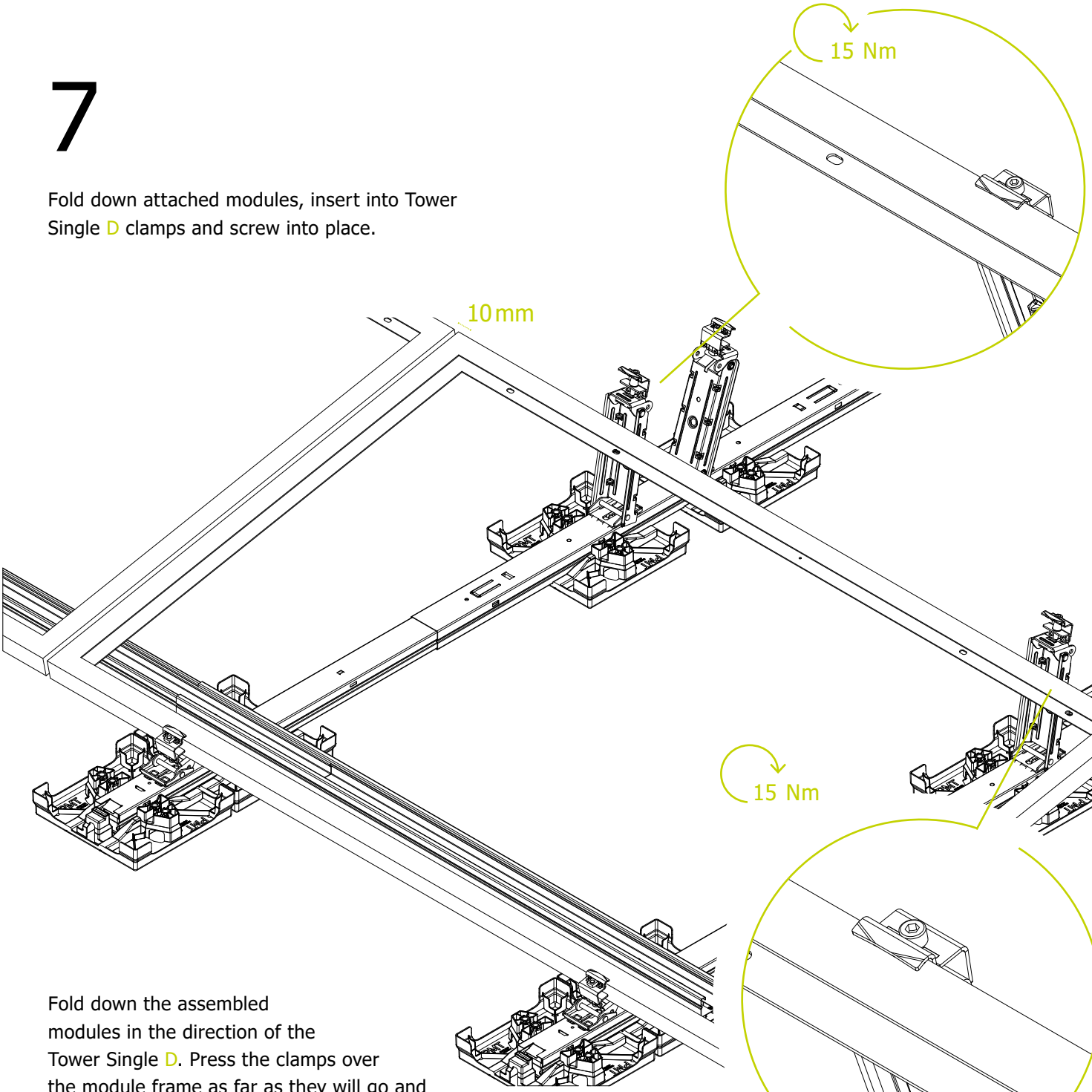




Screw them in on the reverse side.

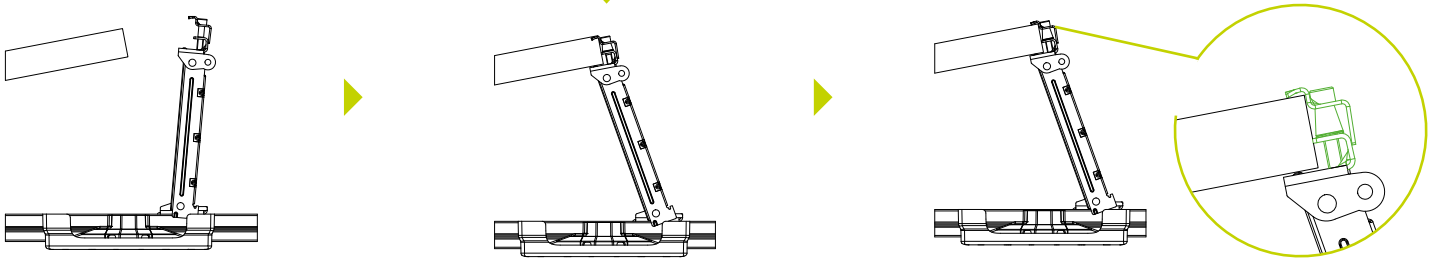
7

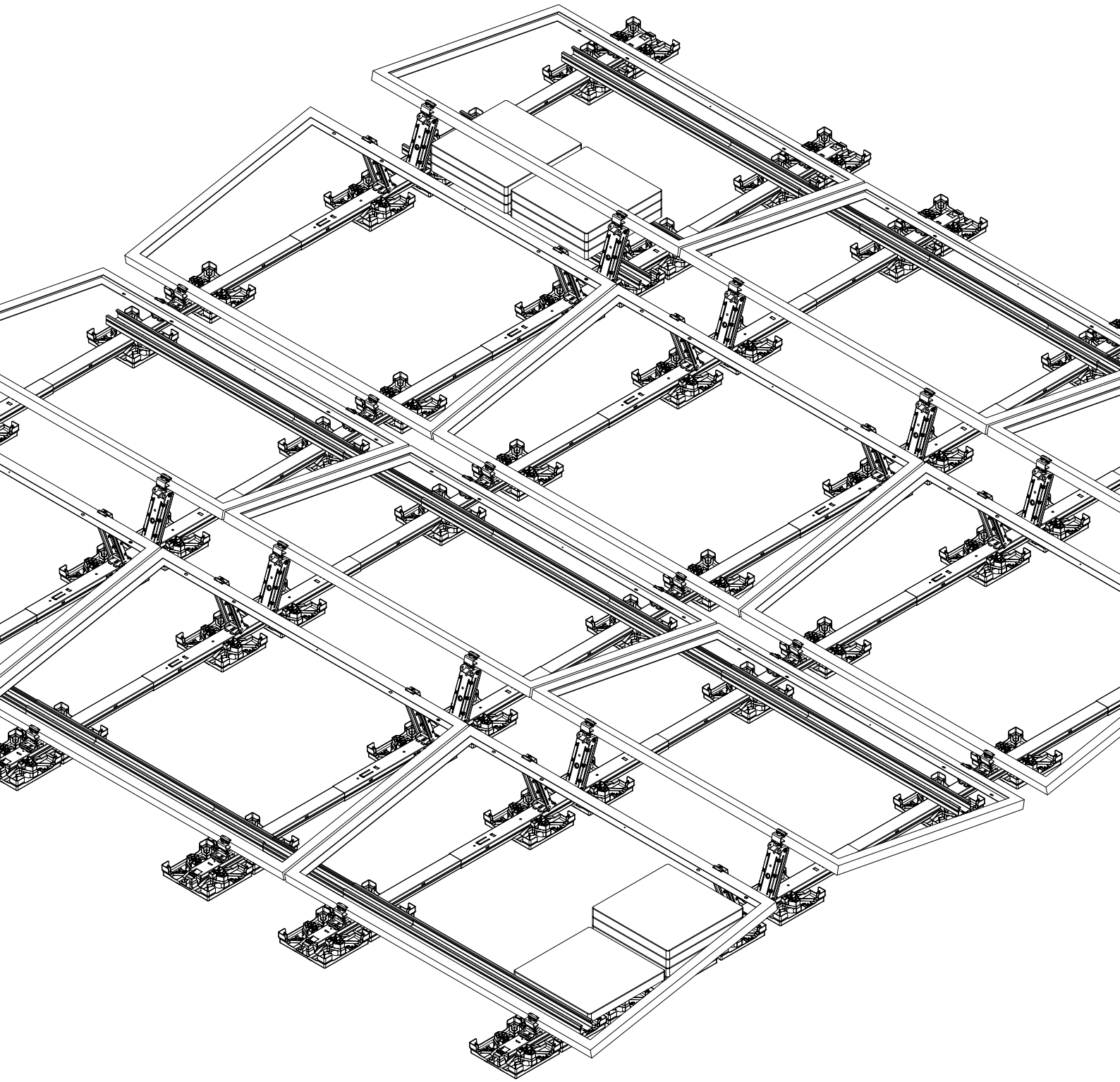
Fold down attached modules, insert into Tower Single D clamps and screw into place.



Fold down the assembled modules in the direction of the Tower Single D. Press the clamps over the module frame as far as they will go and then screw them in place. Check that it is correctly positioned and firmly in place.

Screw them in from above.





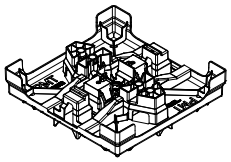
DONE WITH THE
BASIC SYSTEM!

Attention! Some components are available in different lengths and versions.
The exact article versions can be found in the project documents.

Optional component types

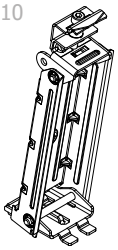
1 Base plate Gravel

PE-HD



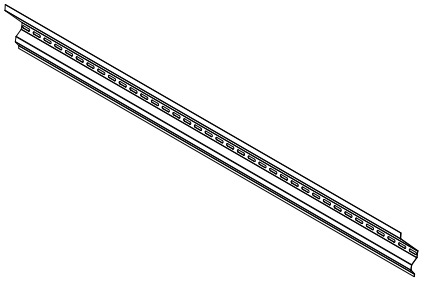
2 Tower Single+

1.0529 - S350 GD ZM310
1.0531 - S550 GD ZM310
1.4301 - S235



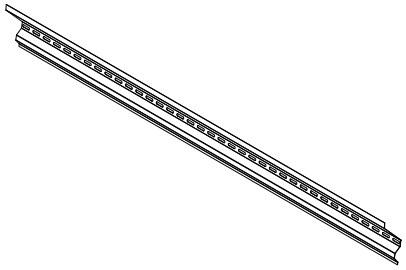
3 Windshield Connector

1.0529 - S350 GD ZM310



4 Windshield

1.0529 - S350 GD ZM310

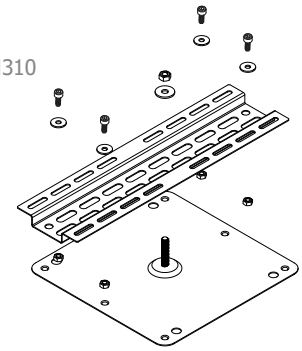


5 Windshield Bracket

1.0531 - S550 GD ZM310

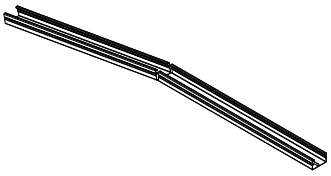
6 USO

1.0529 - S350 GD ZM310



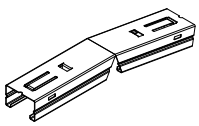
7 Row ridge quarter point

1.0529 - S350 GD ZM310



8 Ridge connector ground rail

1.0529 - S350 GD ZM310

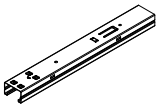


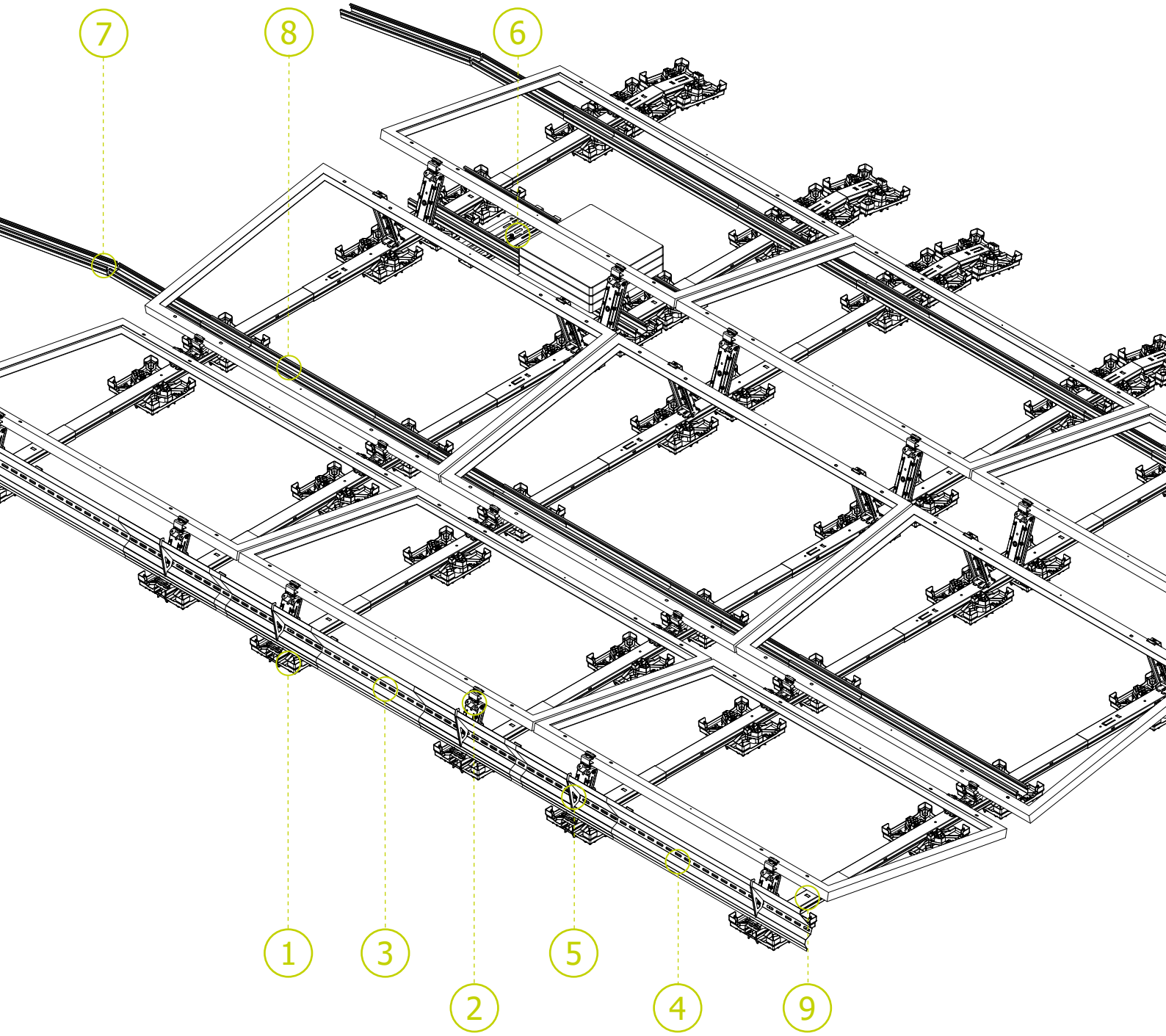
Attention! Some components are available in different lengths and versions.
The exact article versions can be found in the project documents.

Optional component types

9 Ground rail edge

1.0529 - S350 GD ZM310





1 Base plate Gravel

2 Tower Single+

3 Windshield Connector

4 Windshield

5 Windshield Bracket

6 USO

7 Row ridge quarter point

8 Ridge connector ground rail

9 Ground rail edge

Assembly of special components

Optional installation steps:

1 Base plate Gravel

2 Tower Single+

3 Windshield Connector & Windshield

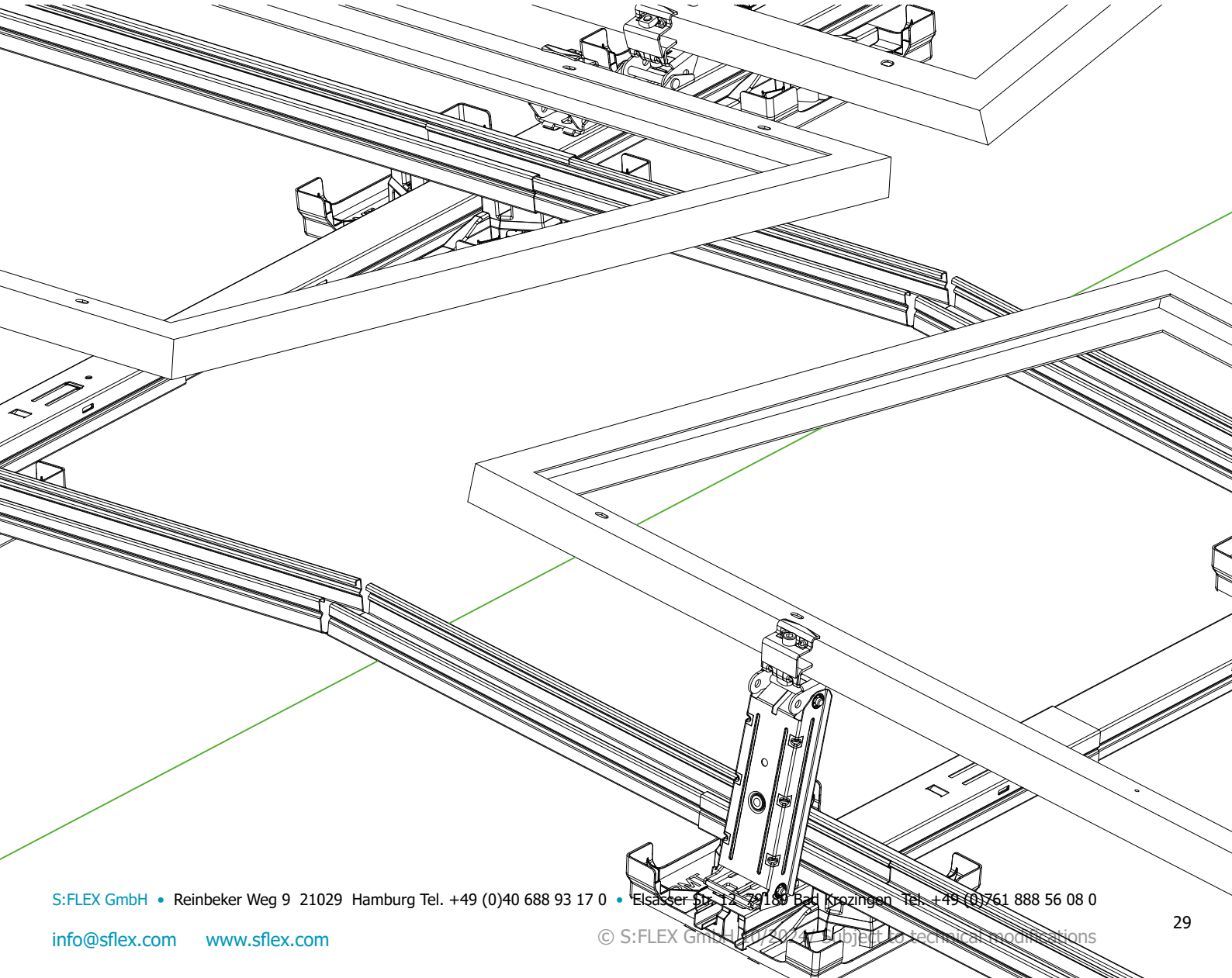
4 Windshield Bracket

5 USO

6 Row ridge quarter point

7 Ridge connector ground rail

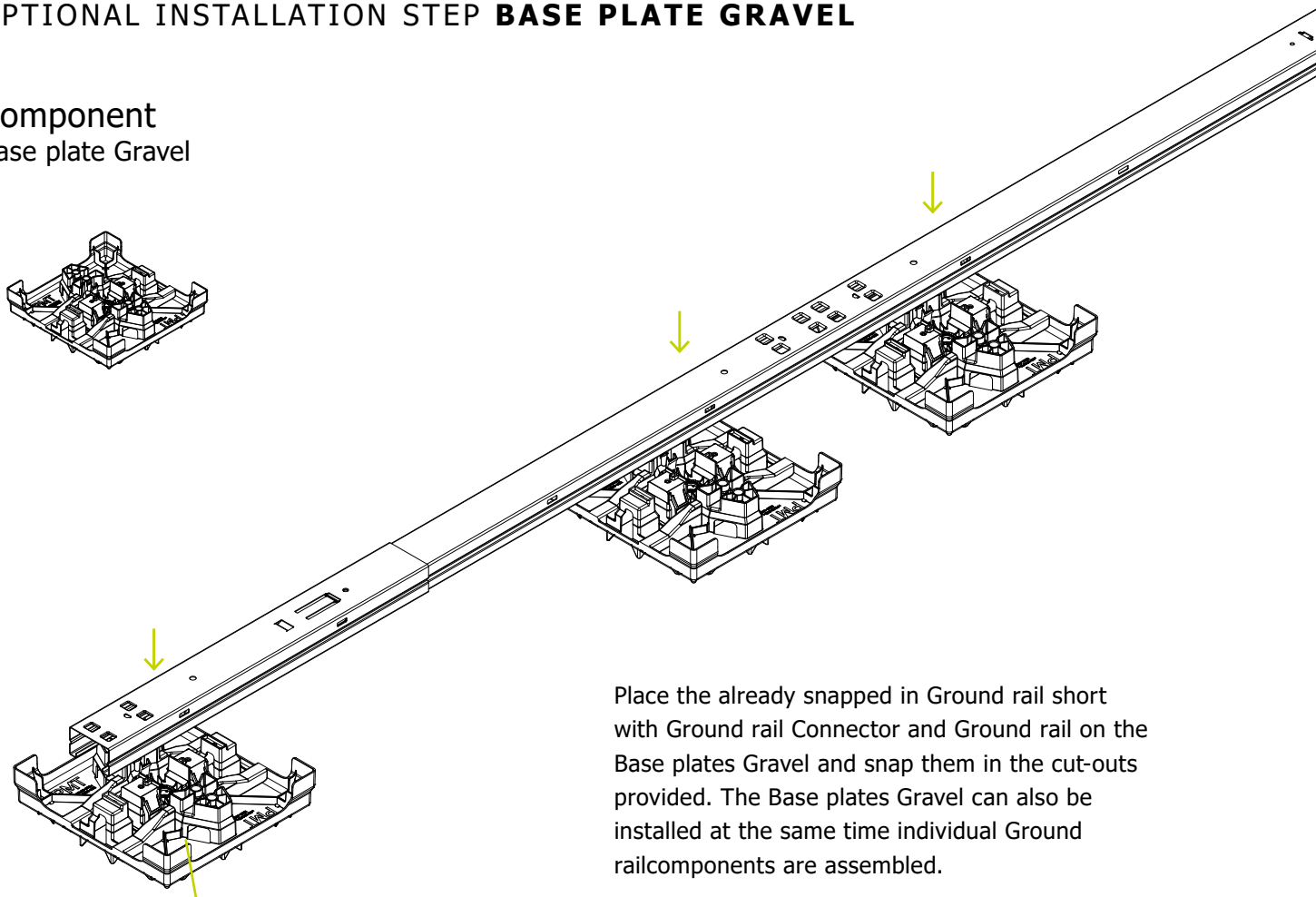
8 Ground rail edge



1

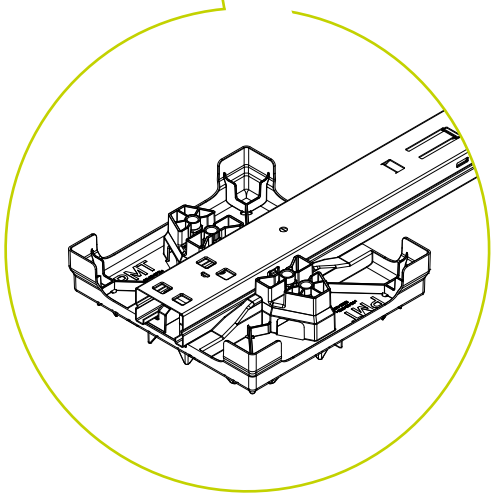
OPTIONAL INSTALLATION STEP **BASE PLATE GRAVEL**

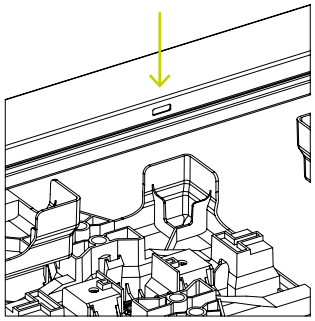
Component
Base plate Gravel

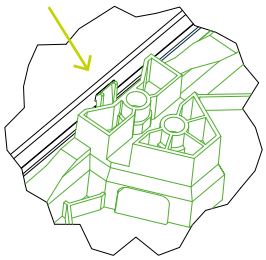


Place the already snapped in Ground rail short with Ground rail Connector and Ground rail on the Base plates Gravel and snap them in the cut-outs provided. The Base plates Gravel can also be installed at the same time individual Ground railcomponents are assembled.

Attention!
Consult the current project report for the exact installation of the Base plates Gravel.



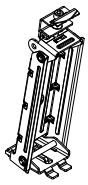


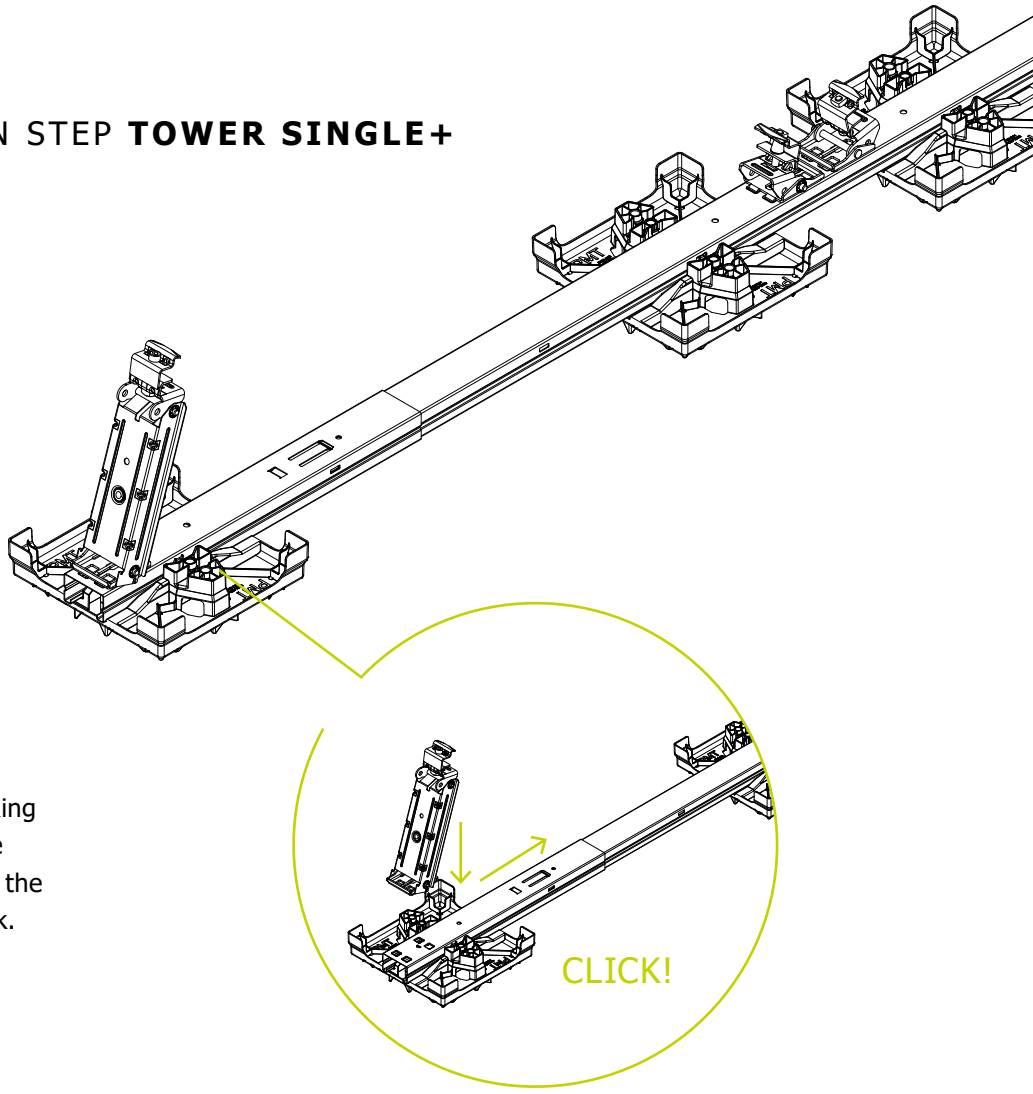


2

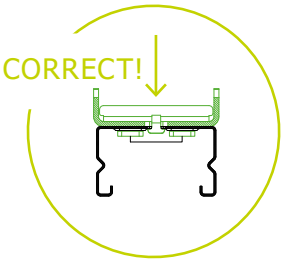
OPTIONAL INSTALLATION STEP **TOWER SINGLE+**

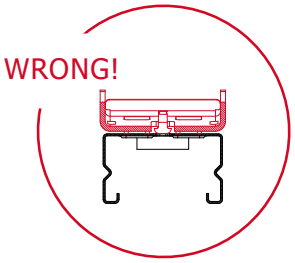
Component
Tower Single+

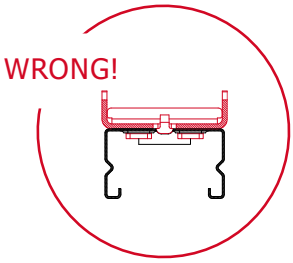


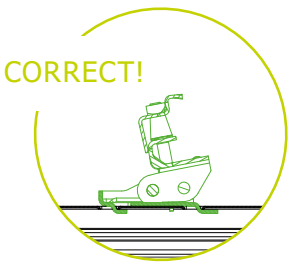


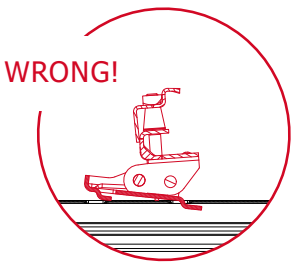
Press the Tower Single+ with the locking lugs vertically into the recesses of the Ground rail short and push it towards the middle of the rail until you hear a click.











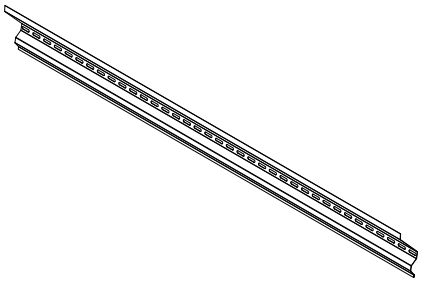
Attention!
Check the snap-lock joint to ensure it fits perfectly. When assembling, ensure that all 4 locking tabs are inserted into the recess provided and that the hammer head engages in the corresponding T-recess. Apply light pressure to the hammer head to ensure that it assumes its final position.

3

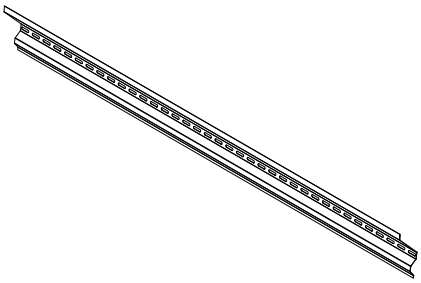
OPTIONAL INSTALLATION STEP **WINDSHIELD CONNECTOR & WINDSHIELD**

Component

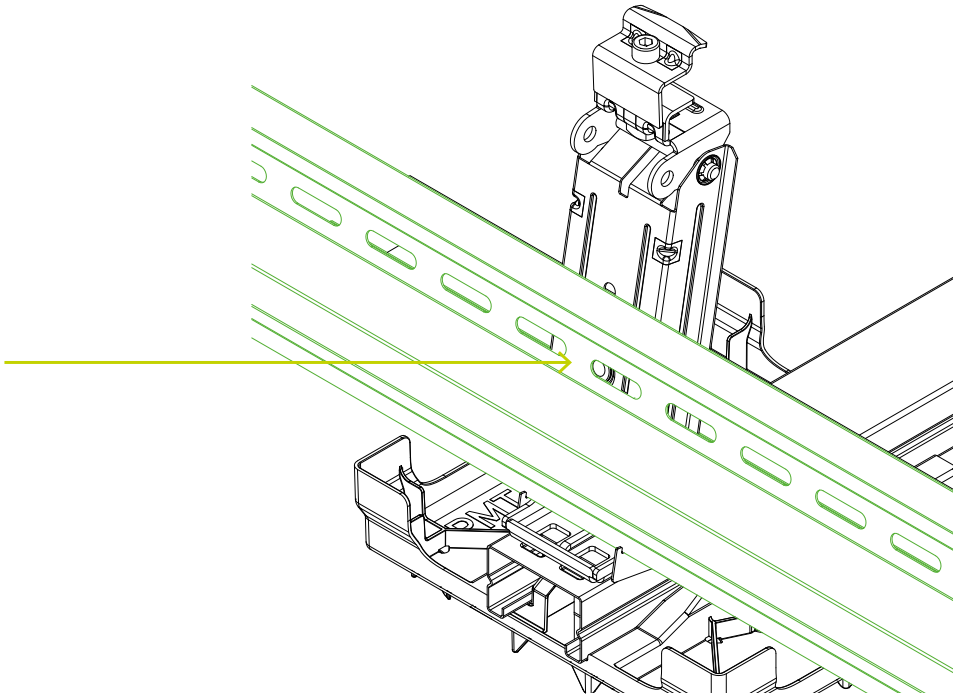
Windshield Connector



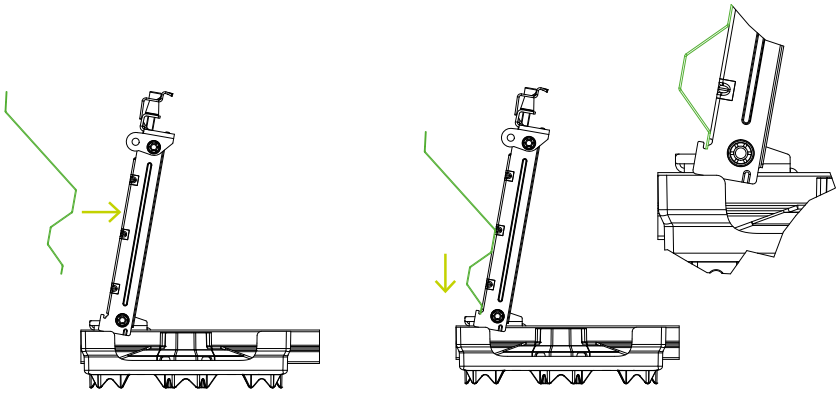
Windshield

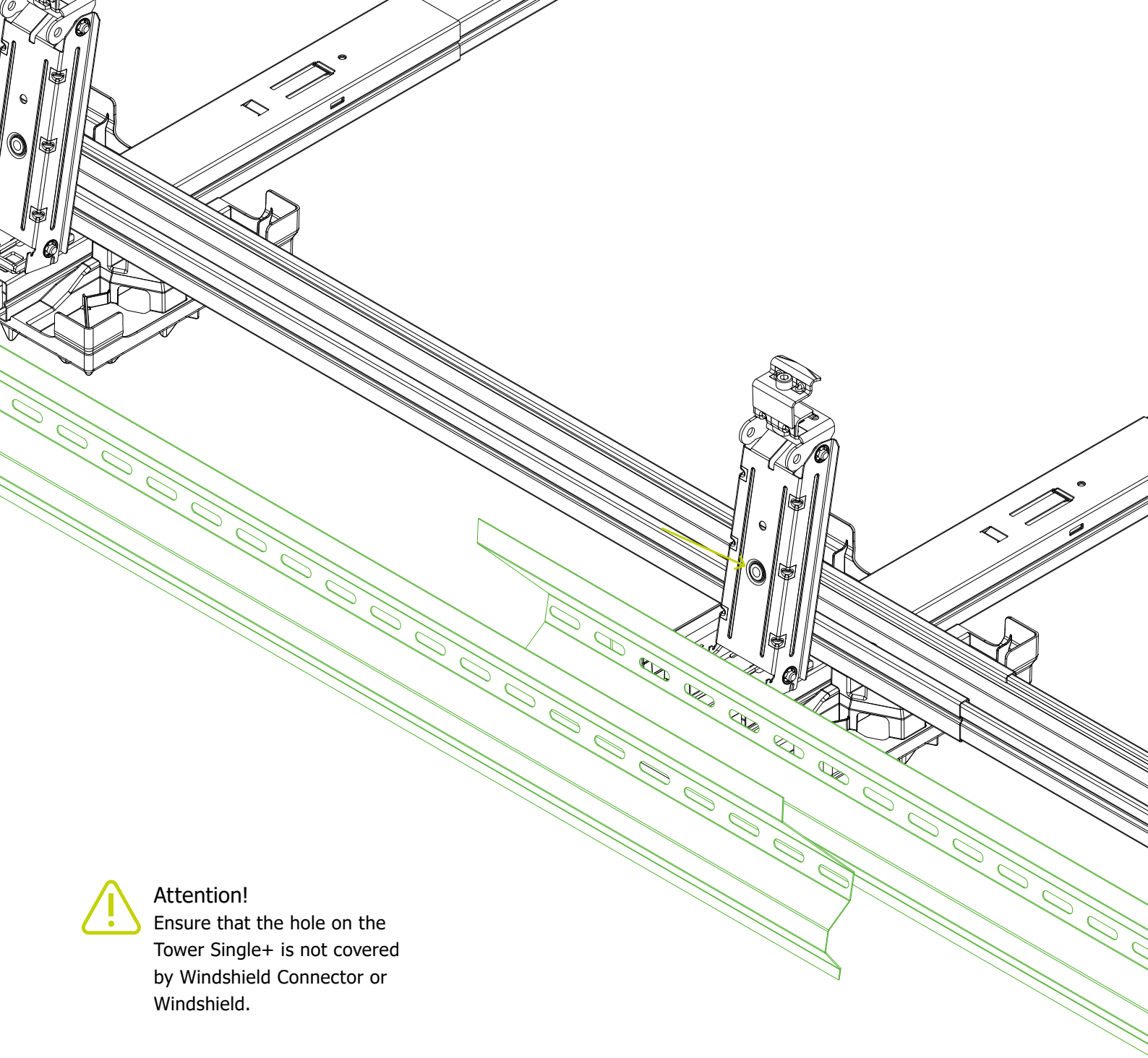


Attention!
Ensure that the hole on the Tower Single+ is not covered by Windshield Connector or Windshield.



Place Windshield or Windshield Connector on the back of the Tower Single+ and slide it down into the cut-out provided.





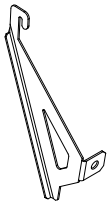
Attention!
Ensure that the hole on the Tower Single+ is not covered by Windshield Connector or Windshield.

The Windshield Connector is mounted in the same way as the Windshield. Ensure that both components have sufficient overlap.

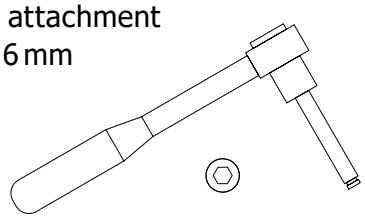
4

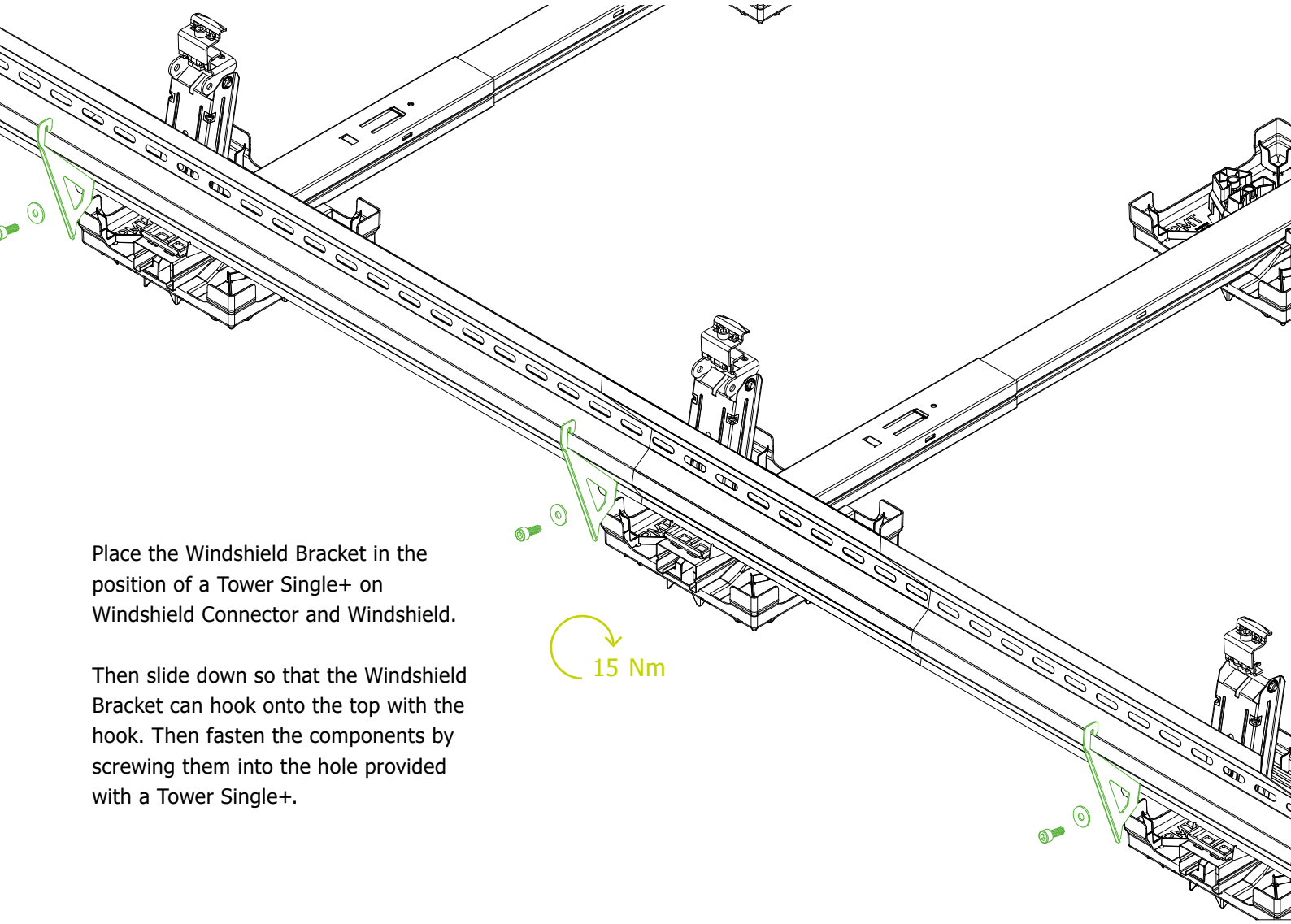
OPTIONAL INSTALLATION STEP **WINDSHIELD BRACKET**

Component
Windshield Bracket



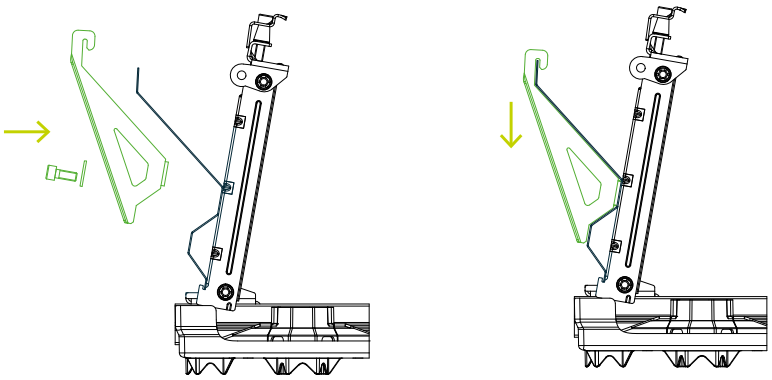
Required tools
Torque-wrench with attachment
Hexagon socket SW 6 mm

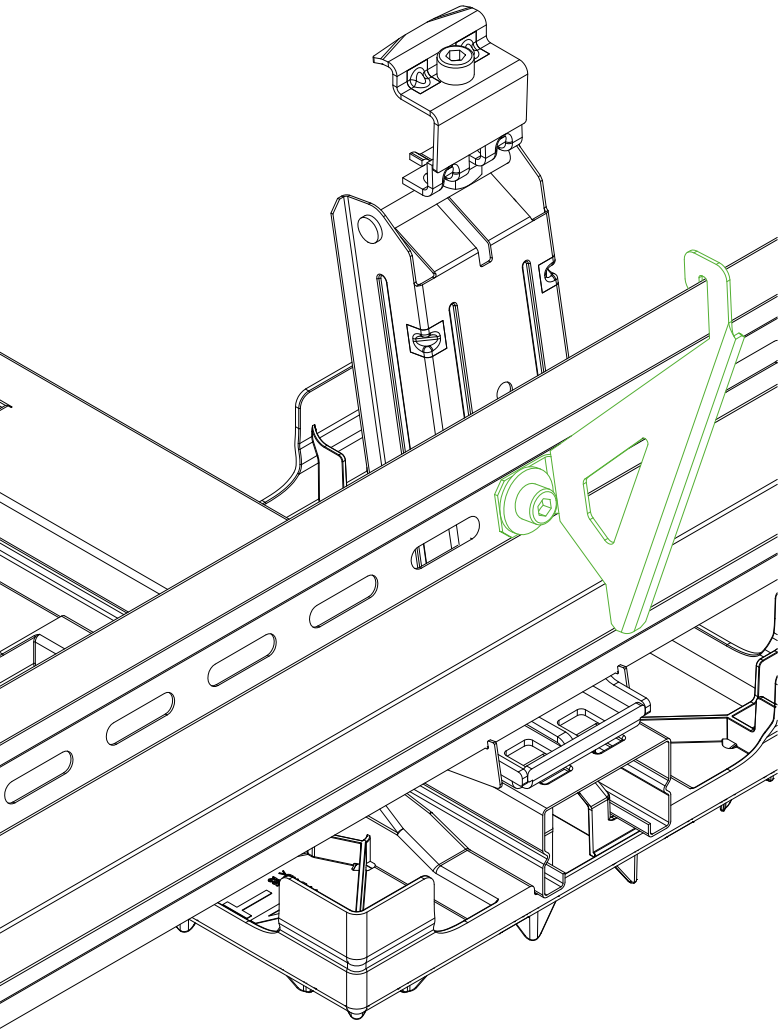




Place the Windshield Bracket in the position of a Tower Single+ on Windshield Connector and Windshield.

Then slide down so that the Windshield Bracket can hook onto the top with the hook. Then fasten the components by screwing them into the hole provided with a Tower Single+.



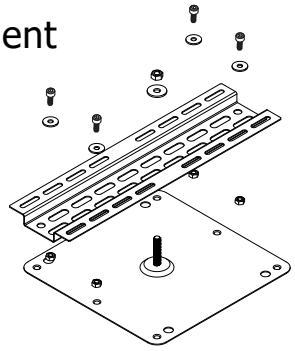


Attention!
Ensure that when attaching Windshield or Windshield Connector, the hole on the Tower Single+ is not covered so that a Windshield Bracket can be attached there.

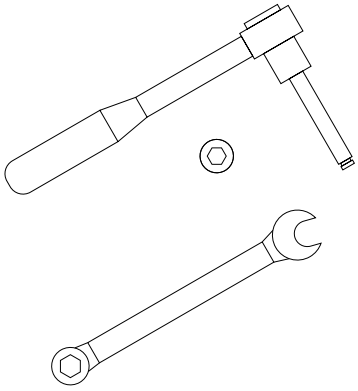
5

OPTIONAL INSTALLATION STEP **RIDGE CONNECTOR**

Component
USO

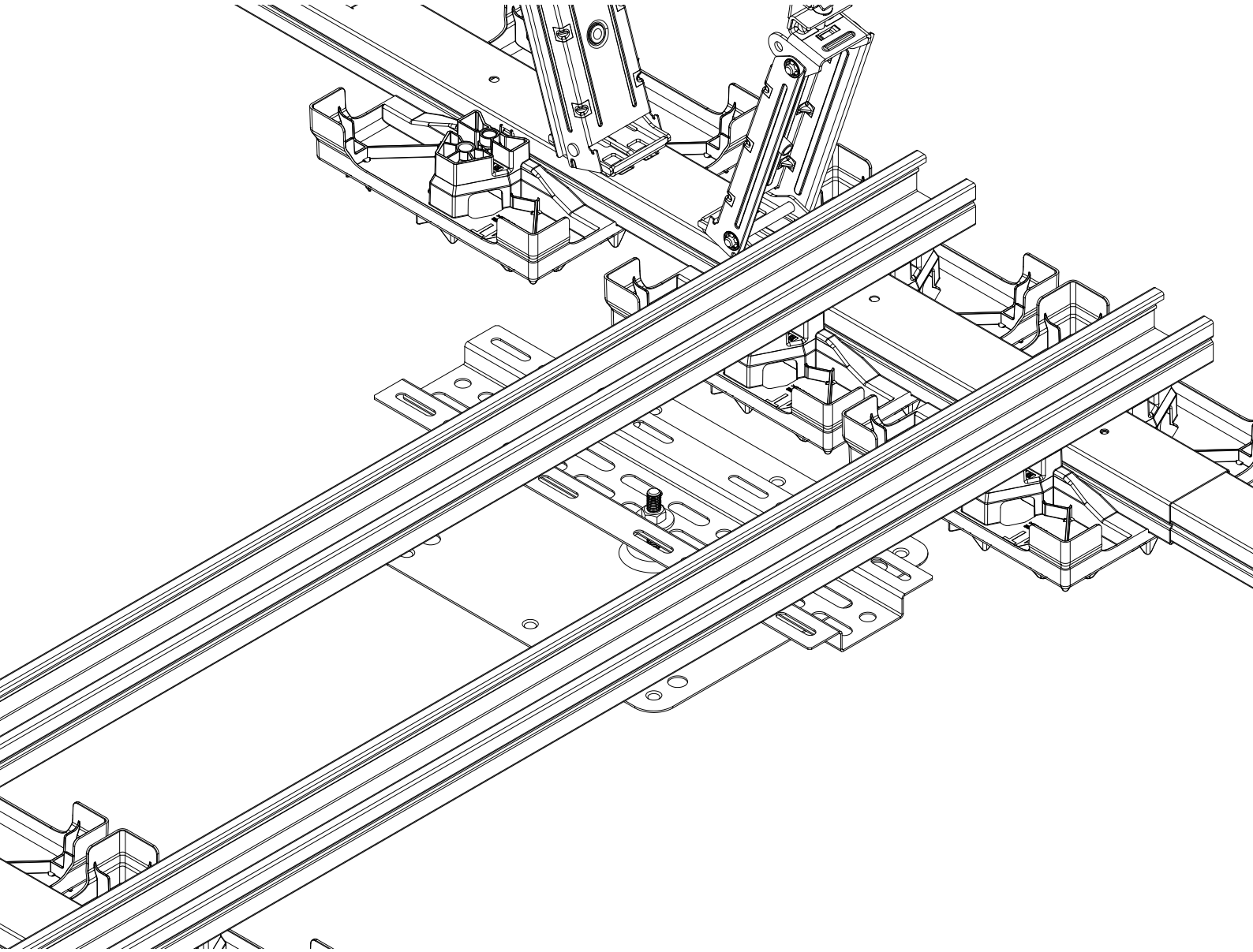


Required tools
Torque-wrench with attachment
Hexagon socket SW 6 mm
and open-end wrench
SW 16 mm + SW13 mm



The USO attachment points are located on the Roll-bar or Splice for roll-bar and should be fitted before the USO is assembled. The USO connection should be fixed as close as possible to a rail.

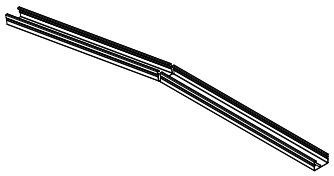
The USO is aligned centrally and pushed over the threaded bolt.



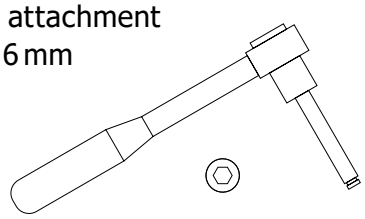
6

OPTIONAL INSTALLATION STEP **ROW RIDGE QUARTER POINT**

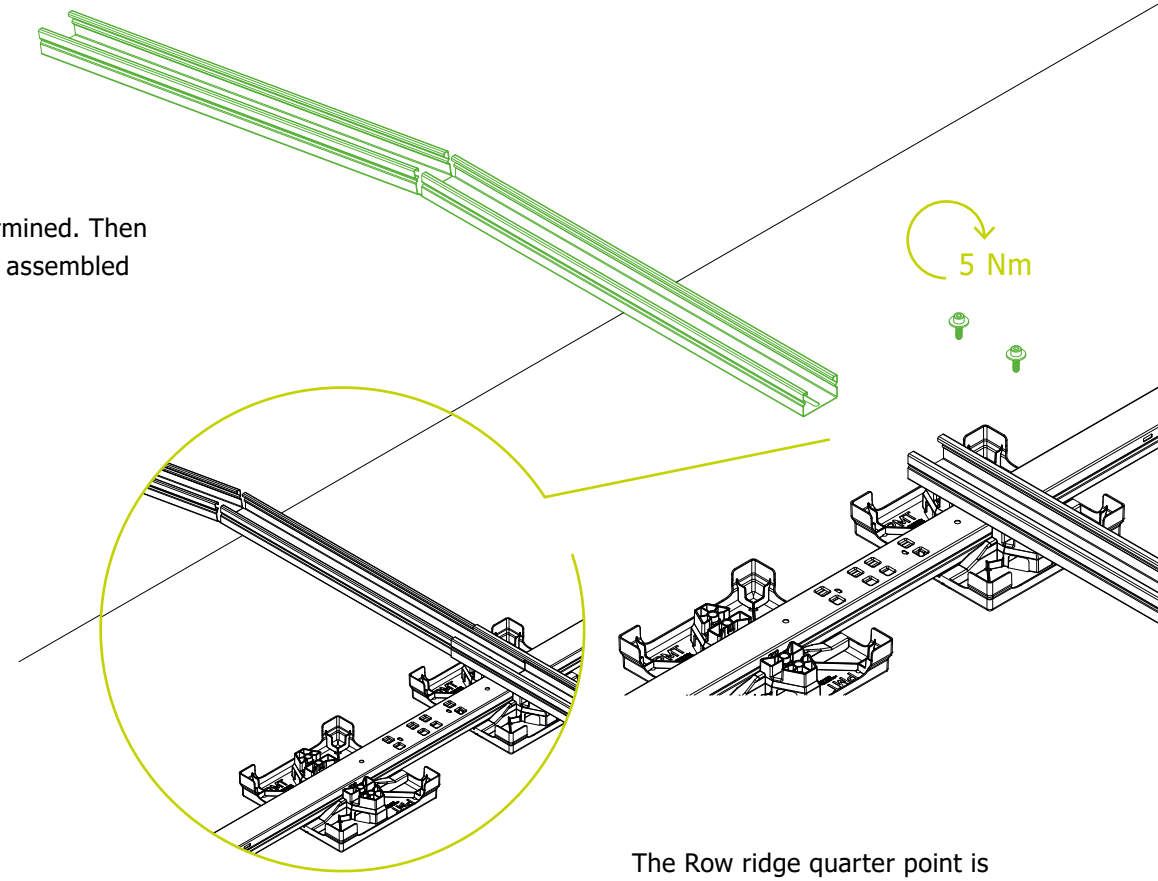
Component
Row ridge quarter point



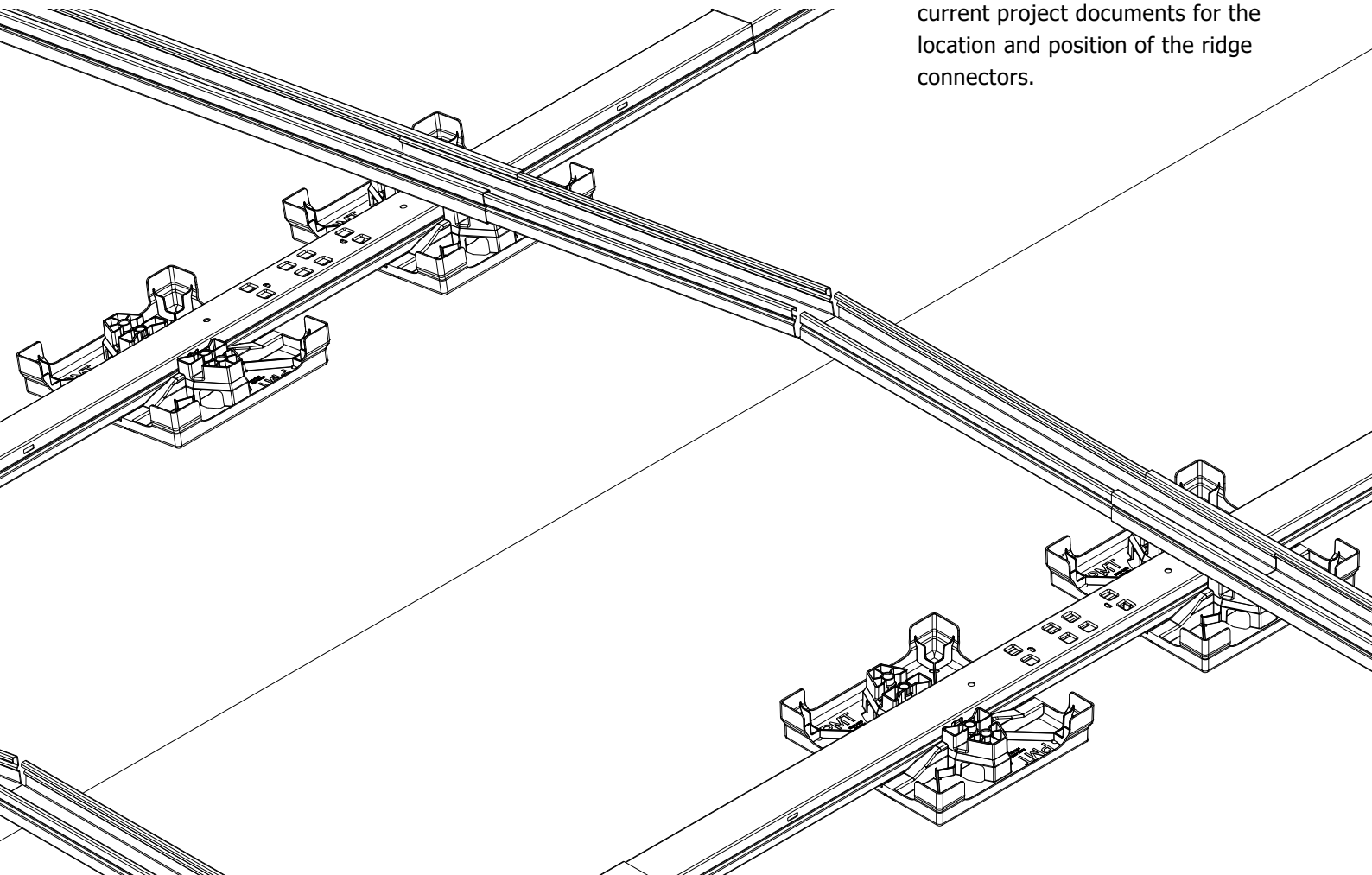
Required tools
Torque-wrench with attachment
Hexagon socket SW 6 mm



First, the ridge line is determined. Then the Ground rail profiles are assembled (parallel to the ridge).



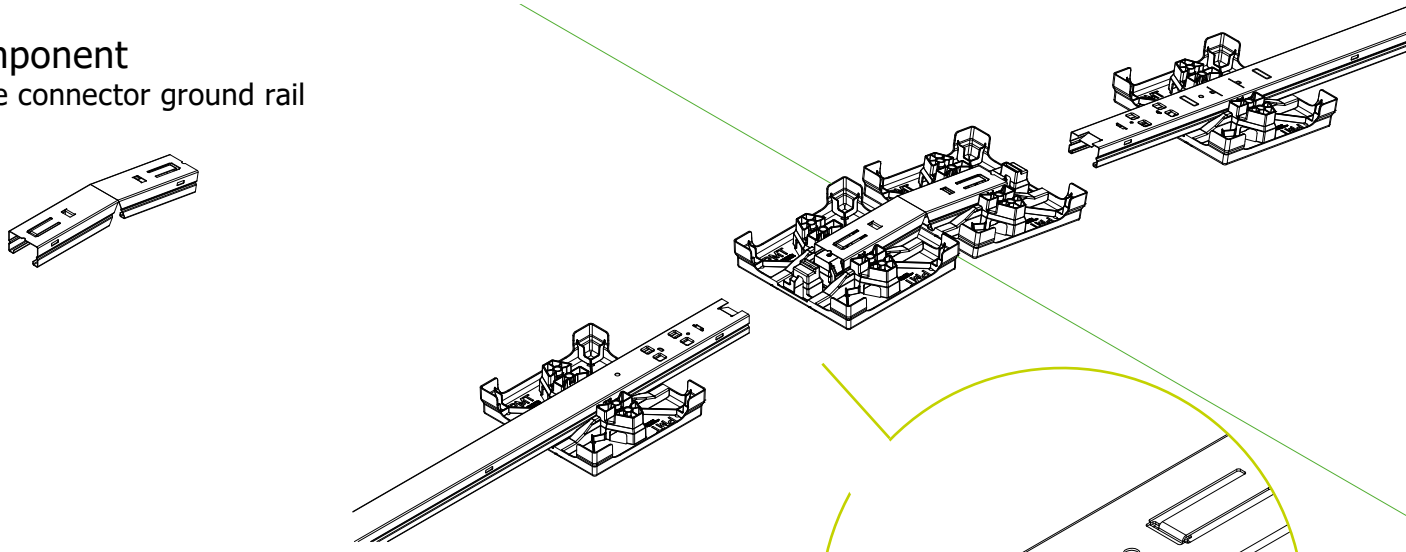
The Row ridge quarter point is installed instead of a Splice for roll-bar. The structure should be assembled evenly on both sides to prevent lopsided loading and thus slipping. Always refer to the current project documents for the location and position of the ridge connectors.



6

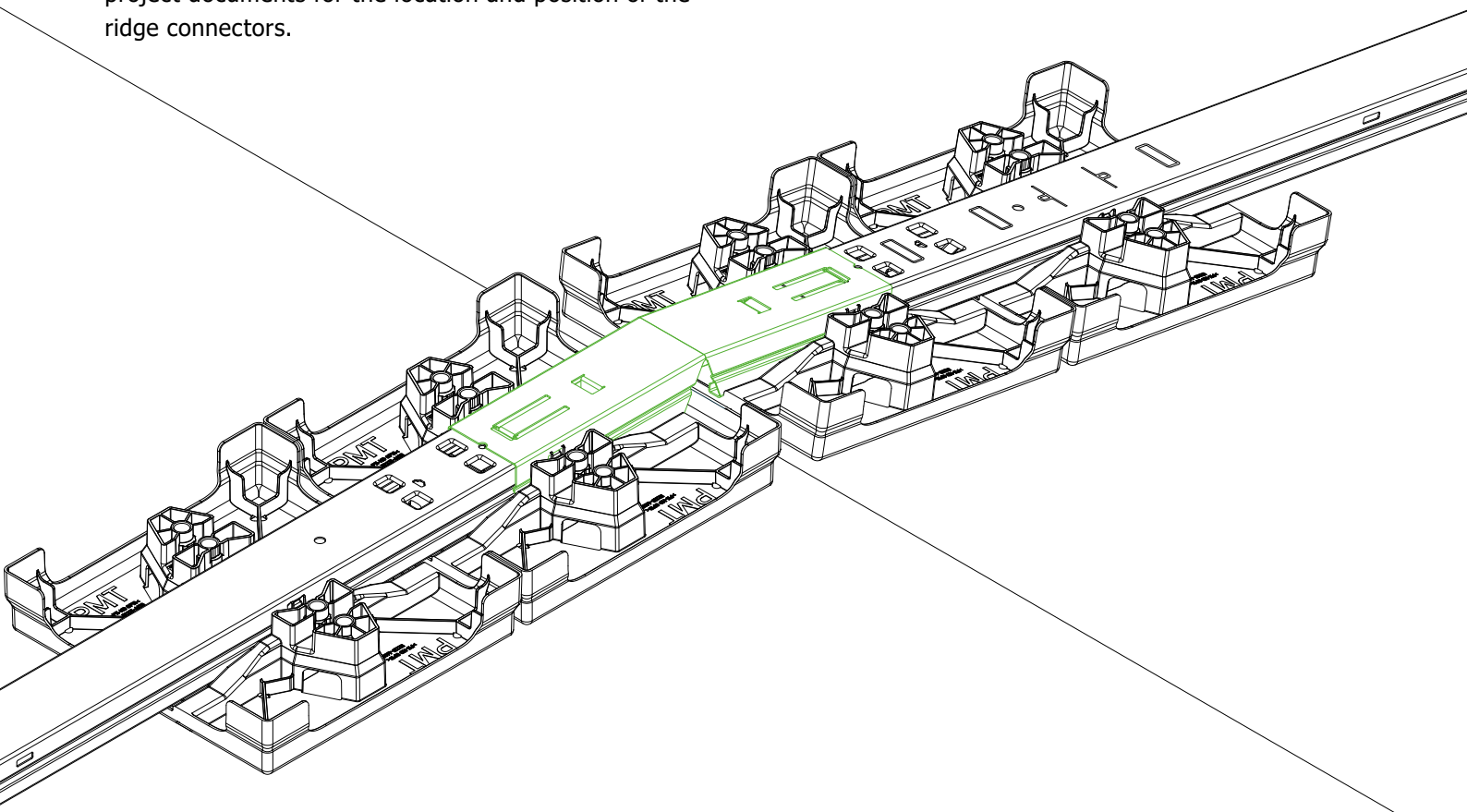
OPTIONAL INSTALLATION STEP **RIDGE CONNECTOR GROUND RAIL**

Component
Ridge connector ground rail



First, the ridge line is determined.

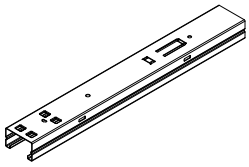
Then the Ground rail profiles are assembled and the Ridge connector ground rail is installed at the end of the Ground rail short. The structure should be assembled evenly on both sides to prevent lopsided loading and thus slipping. Always refer to the current project documents for the location and position of the ridge connectors.



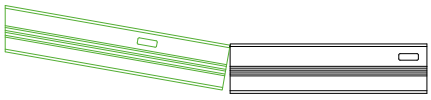
7

OPTIONAL INSTALLATION STEP **GROUND RAIL EDGE**

Component
Ground rail edge

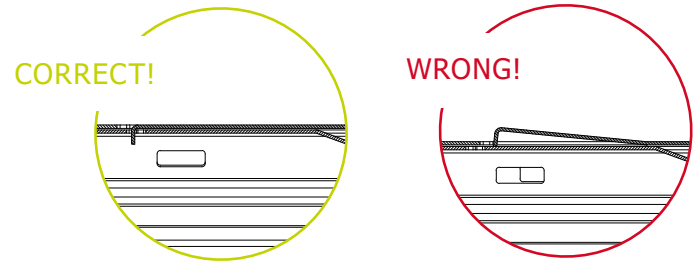


Slide the Ground rail edge into the Ground rail connector profile until you hear a click. At the beginning and end of a complete string, a Ground rail edge must be pushed onto the Ground rail connector.

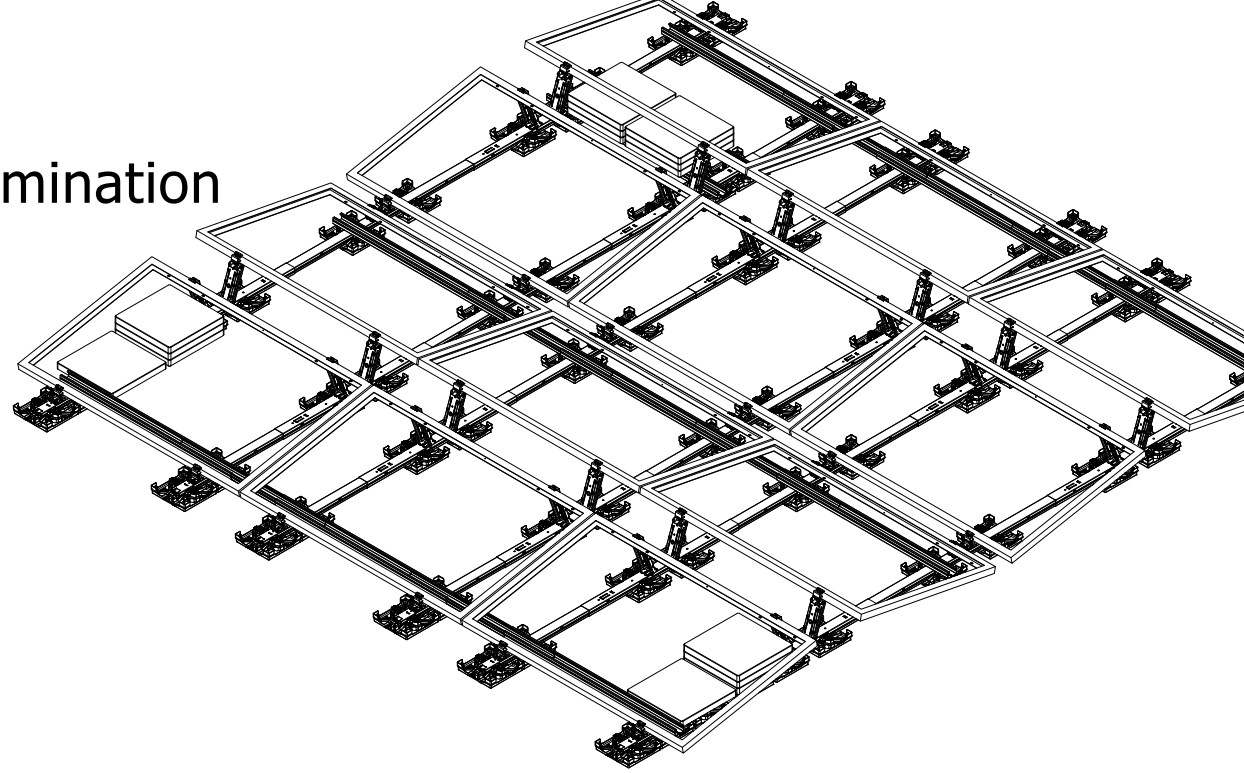


S:FLEX tip
Place the Ground rail edge at a slight angle to the profile of the Ground rail connector and push it in with a tilting movement.

Attention!
Check the snap-lock joint for strength and to ensure it fits perfectly.



Final Examination



Final Examination

- Check whether the entire system and all components have been installed according to the current project report.
- It must be checked whether all screws are inserted at the intended points and tightened with the specified tightening torque.
- Information on the tightening torque can be found in the assembly instructions or on the packaging. Attention! These are safety-relevant and can lead to considerable damage if not observed.
- Check whether all ballast assembly has been performed with the specified weights. The information can be found in the current project report. Make sure that slipping, tilting or wobbling of the ballast elements is permanently eliminated. Attention! These are safety-relevant and can lead to considerable damage if not observed.
- Check that all click-connections are locked correctly.

Maintenance

- The upper and lower limits of the tightening torque of the screw connections must be checked regularly as part of the maintenance (maintenance interval at least once a year; observe the maintenance protocol).
- The recommendations for maintenance routines of the S:FLEX X118 system due to thermal expansion must be observed.

Disassembly

Disassembly of the S:FLEX mounting system may only be carried out by trained specialist personnel. Observe the same safety instructions, standards and guidelines as provided for the installation. In general, disassembly is carried out in reverse order to the described installation.

Before disassembly, disconnect the PV modules from the mains network. Disconnect all of the PV modules' electrical cables (string lines and plug connectors) and remove them from the frame system.

Then remove the modules and store them safely. Improper disassembly can lead to damage to the modules.

Disassemble frame system and safely store all of the parts.
Any holes in the roof must be sealed by a specialist.

Disposal

The S:FLEX mounting system is made from aluminium, stainless steel and steel components. These materials can be recycled after disassembly. The frame system must only be disposed of by a specialist waste management company. Observe the applicable national standards and guidelines.

User agreement for the S:FLEX LEICHTmount Snap Edge Clamping

We point out that the assembly system is sold as part of a purchase agreement.
Its installation/processing or acquisition by a third party is not carried out in the name of, or on behalf of, S:FLEX GmbH. Installation/processing of the system must be carried out by appropriately qualified personnel and strictly in accordance with the installation instructions.

The design and planning of the system must be undertaken using the S:FLEX Planning Software. S:FLEX GmbH is neither responsible for the project-specific structural analysis of the roof structure, nor for obtaining and documenting the approval of the roof manufacturer for use of the respective fastening system on the roof in question (in the terms of the warranty), nor for correct installation of the fastening system.

S:FLEX GmbH accepts no liability for faults and damage and/or a restricted or limited operational capability of the system which has resulted from incorrect installation and/or installation which was not undertaken in accordance with the installation instructions and/or the project report. In the case of incorrect installation, the buyer‘s right to assert claims for material defects shall expire.

The system warranty is only valid if all system components were acquired from S:FLEX GmbH.

The system requires approval for the modules to also be mounted in the indicated manner (i.e. fitted to the modules‘ shorter sides). This approval can either be given generally as part of the module certification or, as the case may be, issued by the module manufacturer on a project-specific basis.

Warranty / disclaimer

The information regarding dimensioning provided in these instructions is merely suggested values based on prior experience. Binding structural analyses for installation frames can be created using the S:FLEX planning software.

As an installation company, you are responsible for the correct execution of the installation. S:FLEX GmbH is not liable for the dimensional information contained in commercial system quotations.

As an installation company, you are responsible for the mechanical durability of the interface connections mounted on the building‘s structure. In particular, this includes ensuring that these are leak-tight. The components supplied by the company S:FLEX GmbH are designed for the expected loads and in accordance with the currently available technology. In this context, you must provide the company S:FLEX GmbH with information about all general technical conditions in writing via the project data collection sheet (information about the supporting structure, snow load zone, building heights, wind loads, etc.).

S:FLEX GmbH is not liable if the installed components are not properly handled. Any use close to the sea needs to be clarified with S:FLEX GmbH directly on a case-by-case basis due to the increased risk of corrosion. Provided that the system is handled properly and dimensioned according to the structural conditions and normal environmental and ambient conditions, the company S:FLEX GmbH provides a warranty from transfer of risk to the warranty holder, which guarantees that the metallic components of the racks will remain free from defects with regard to material and workmanship for a period of 10 years. This warranty does not apply to wear parts. For additional information, please refer to the separate warranty provisions.
This applies within the context of the generally prevalent weather and environmental conditions.